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VISITOR RESPONSE TO FOUR COSTUME DISPLAY FORMS IN A MUSEUM EXHIBIT

by

C. JANINE ANDREWS

A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE

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DEGREE OF MASTER OF SCIENCE

in

CLOTHING AND TEXTILES

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N. Fetterman

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Date April 16, 1984

ABSTRACT

VISITOR RESPONSE TO FOUR COSTUME DISPLAY FORMS IN A MUSEUM EXHIBIT

by

C. JANINE ANDREWS, MASTER OF SCIENCE

UNIVERSITY OF ALBERTA, 1984

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The purpose of this study was to design and develop a costume exhibit which incorporated a systematic means of measuring subjects' cognitive and affective responses to four types of costume mounts, including a flat form, a torso form, an abstract mannequin and a period mannequin. As well, the relationships between the subjects' affective responses to the body form used to display the costume and the subjects' cognitive responses to the exhibit were examined. The methodology for the study involved three related areas of research including basic communication theory, a goal-referenced approach to evaluation and systematic testing of exhibit variables.

The sample, accidental/purposive in nature, consisted of a pretest group of 30 subjects who did not view the exhibit and a posttest

group of 100 subjects with 25 subjects viewing each of the four body forms. Demographic and cognitive data were collected from the pretest and posttest groups by means of a structured interview that included a demographic questionnaire and an objective test. The posttest interview also included the Andrews Semantic Differential to collect the affective response data.

The data were analysed using one-way analysis of variance followed by a Scheffé posteriori contrast test on each of the significant findings. As well, Pearson product moment correlation was used. Results of the statistical analysis showed that the scores on the objective test for those who did not view the exhibit were significantly lower than the other four groups who did view the exhibit. These results indicated that there was information transfer between the exhibit and its viewers. However, it was found that the use of different costume mounts had no appreciable affect on what the viewers learned from the exhibit. The viewers' cognitive response was consistent throughout each of the posttest groups.

While the viewers showed no difference in cognitive response to the different body forms, the viewers clearly reacted differently on the affective level. The results of the study indicated that the period mannequin with head, facial features, hair, arms and legs was considered to be the most favourable body form overall. The three-dimensional torso form without a head was found to be the second most favourable body form overall and the most favourable body form in terms of the scale "explicit-ambiguous". However, the torso form was considered the

second least favourable body form on activity related scales. The abstract mannequin, on the other hand, was found to be a favourable body form only where the activity scales were concerned. The body form that was found to be the least favourable in terms of the viewers' overall responses was the flat two-dimensional form.

When the viewers' affective responses to the body form and the viewers' cognitive responses to the exhibit were examined in terms of relationships that may have existed, the results indicated that a significant correlation existed between the variables for only those who viewed the abstract mannequin. No significant correlation was found for any of the other three groups nor was there a significant correlation found for the total sample of viewers.

It was concluded that for the particular swimwear exhibit developed for this study the body forms did not make a difference to the viewers' cognitive responses among the four groups of viewers. However, the body forms were considered to be very important with respect to the viewers' affective responses. Further research and recommendations were suggested.

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TABLE OF CONTENTS

CHAPTER		PAGE
1	INTRODUCTION	1
	Purpose and Statement of the Problem	1
	Justification	2
	Objectives	3
	Hypotheses	4
	Definitions	4
	Assumptions	8
	Limitations	9
	Delimitations	9
2	REVIEW OF LITERATURE	11
	Museums and Museum Exhibits	11
	Communication Theory	20
	Museum Exhibit Evaluation and Planning	24
	Goal-Referenced Evaluation	26
	Exhibit Evaluation and Systematic Testing of Exhibit Components	31
	Goal-Free Evaluation	32
	Museum Visitor Studies	34
	Visitor Characteristics	34
	Visitor Behaviour	36
	Visitor Reaction	37

CHAPTER PAGE

Costume Exhibits..... 45
Conservation Requirements..... 46
Communication and Costume..... 48
3 METHODOLOGY..... 53
Theoretical Framework..... 53
Procedure..... 55
Selection of the Sample..... 57
Sampling Procedure..... 59
Pretest Group..... 59
Posttest Group..... 60
Description of the Instruments..... 61
Demographic Questionnaire..... 61
Objective Test..... 61
Andrews Semantic Differential..... 64
Analysis of Data..... 69
4 FINDINGS..... 71
Demographic Findings..... 71
Cognitive Response..... 80
Affective Response..... 87
Relationship between Cognitive
and Affective Response..... 115
5 SUMMARY AND RECOMMENDATIONS..... 118

CHAPTER PAGE

Recommendations..... 125

Recommendations for Improving the Methodology of the Study..... 125

Recommendations for Further Research..... 127

Recommendations for Museum Curators, Designers and Educators..... 131

BIBLIOGRAPHY..... 134

APPENDICES..... 141

Appendix I. Two Dimensional Form Construction Method..... 142

Appendix II. Three Dimensional Torso Form Construction Method..... 145

Appendix III. Particulars for Commercial Mannequins..... 149

Appendix IV. Exhibit Proposal..... 151

Appendix V. Exhibit Labels..... 159

Appendix VI. Pretest Questionnaire..... 162

Appendix VII. Posttest Questionnaire..... 168

Appendix VIII. Andrews Semantic Differential..... 174

Appendix IX. Visual Aids for the Questionnaire..... 178

Appendix X. Photographs of the Four Different Mannequins Used in the Exhibit..... 182

LIST OF TABLES

TABLE	DESCRIPTION	PAGE
1	Percentage Distribution for Age of the Subjects in the Five Groups (n=130)	73
2	Percentage of Subjects by Age Category Compared with the Andreoff (1980) Study	74
3	Sex Distribution of Subjects in Each of the Five Groups (n=130)	75
4	Percentage of Subjects by Residence in Each of the Five Groups (n=130)	76
5	Percentage of Subjects by Residence Compared with the Andreoff (1980) Study	77
6	Percentage of Subjects by Frequency of Visits to the Provincial Museum in Each of the Five Groups (n=130)	78
7	Percentage of Subjects by Frequency of Visits to Other Museums in Each of the Five Groups (n=130)	79
8	Ranges, Means and Standard Deviations for Number of Seconds Viewers Spent Viewing the Exhibit (n=100)	80
9	Ranges, Means and Standard Deviations for Subjects' Scores on the Objective Test in Each of the Groups (n=130)	81
10	Analysis of Variance for Cognitive Response as Measured by the Objective Test for Those Who Saw the Exhibit and for Those Who Did Not	82
11	Scheffé Posteriori Contrast Test for Cognitive Response on the Objective Test among the Five Groups of Subjects	83
12	Analysis of Variance for Cognitive Response as Measured by the Objective Test between the Posttest Groups of Viewers	85

TABLE	DESCRIPTION	PAGE
13	Ranges, Means and Standard Deviations for the Total Score on the Andrews Semantic Differential for Viewers in Each of the Four Groups (n=95)	88
14	Analysis of Variance for Affective Response as Measured by the Andrews Semantic Differential between the Posttest Groups of Viewers	89
15	Scheffé Posteriori Contrast Test for Affective Reponse as Measured by the Andrews Semantic Differential between the Posttest Groups of Viewers	90
16	Factor Loadings and Communalities for Each Scale and Eigenvalues and Percent Total Variance for Each Factor on the Andrews Semantic Differential	92
17	Means and Standard Deviations for Scores on the Evaluative, Activity and Potency Factors of the Andrews Semantic Differential for Viewers in Each of the Four Posttest Groups	95
18	Analysis of Variance for Scores on the Evaluative Factor of the Andrews Semantic Differential between the Posttest Groups	96
19	Scheffé Posteriori Contrast Test for Scores on the Evaluative Factor of the Andrews Semantic Differential between the Posttest Groups	97
20	Analysis of Variance for Scores on the Activity Factor of the Andrews Semantic Differential between the Posttest Groups	98
21	Scheffé Posteriori Contrast Test for Scores on the Activity Factor of the Andrews Semantic Differential between the Posttest Groups	99
22	Analysis of Variance for Scores on the Potency Factor of the Andrews Semantic Differential between the Posttest Groups	101

TABLE	DESCRIPTION	PAGE
23	Means and Standard Deviations for Scores on Each Scale of the Evaluative Factor of the Andrews Semantic Differential for Viewers in Each of the Four Groups	102
24	Analysis of Variance for Scores on Each Scale of the Evaluative Factor on the Andrews Semantic Differential	103
25	Scheffé Posteriori Contrast Test for Scores on Each Scale of the Evaluative Factor on the Andrews Semantic Differential	105
26	Means and Standard Deviations for Scores on Each Scale of the Activity Factor of the Andrews Semantic Differential for Viewers in Each of the Four Groups	108
27	Analysis of Variance for Scores on Each Scale of the Activity Factor on the Andrews Semantic Differential	109
28	Scheffé Posteriori Contrast Test for Scores on Each Scale of the Activity Factor on the Andrews Semantic Differential	110
29	Means and Standard Deviations for Scores on Each Scale of the Andrews Semantic Differential for Viewers in Each of the Four Groups	112
30	Analysis of Variance for Scores on Each Scale of the Potency Factor on the Andrews Semantic Differential	112
31	Means and Standard Deviations for Scores on Each Scale Not Clustering with One of the Three Factors on the Andrews Semantic Differential	113
32	Analysis of Variance for Scores on Each Scale of the Andrews Semantic Differential that Did Not Cluster with any of the Three Factors	113

TABLE	DESCRIPTION	PAGE
33	Scheffé Posteriori Contrast Test for Each Scale Not Clustering with One of the Three Factors on the Andrews Semantic Differential	114
34	Correlation between Scores on the Objective Test (Cognitive Response) and Scores on the Andrews Semantic Differential (Affective Response) for the Groups of Viewers Viewing the Exhibit	115

CHAPTER 1

INTRODUCTION

Purpose and Statement of the Problem

In any costume display, the exhibit planner must choose some form of support upon which to mount the costume. Unlike other artifacts, the costume was designed to be worn on a human body and was not designed to stand on its own. The costume mount thus forms an integral part of any costume exhibit and must be incorporated into the exhibit.

In the display of costumes, as in any planned exhibit, the exhibit planner(s) has(have) a message to communicate and must choose a costume mount that will best express or help express that message, whatever the message may be. The specific objective of the intended message in a costume exhibit will, of course, vary from one exhibit to the next. In a commercial setting, the purpose of the exhibit may be to simply arouse an affective response which will motivate the viewer to buy. In a museum setting, there is more apt to be an attempt to reach the viewer on a cognitive level as well as an affective level.

The purpose of this study was to design and develop a systematic means of measuring visitors' responses to the type of mannequin or other body support form used to display the costume, in this case, a bathing costume. The author sought to develop an exhibit with cognitive and

affective objectives and at the same time, a methodology to measure visitors' cognitive and affective responses to the type of body form used to display the costume.

In the display of the bathing costume, four different types of costume mounts were used. Visitors' reactions to the different body forms were analysed in terms of two criteria. To what extent did the body form used affect the intended educational message? Secondly, to what extent did the visitors 'like' the body form used? More specifically, the problem in this study addressed the following question. What relationship exists between the visitors' affective responses to the body form used to display the costume and the visitors' cognitive responses to the exhibit?

Justification

Communication is fundamental to any museum exhibit and in order to determine whether or not the intended message is being communicated, some means of measuring visitor feedback is necessary. Studies conducted as early as the 1920's looked at visitor response in a museum setting but little research was done between the 1920's and the 1960's. Research in the field of communication theory and in the area of evaluation of programs has advanced and the application of these methodologies to the museum setting has increased in recent years, yet that research is still far from comprehensive and there is little by way

of an empirical data base to assist the curator. This is especially so in the field of costume display.

It is hoped that this study will firstly, provide a limited amount of substantive information in relation to visitor reaction to particular types of costume mounts in costume displays. Secondly, it is hoped that the methodology adopted in this thesis will be of some assistance in future research in the area of exhibit evaluation.

Objectives

The objectives of this study are as follows:

1. To determine if a significant difference existed in the museum visitors' knowledge of women's early twentieth century bathing costumes between those who saw the exhibit and those who did not see the exhibit.
2. To determine if a significant difference existed among the four groups* of viewers with respect to their cognitive response to the exhibit.
3. To determine if a significant difference existed among the four groups* of viewers with respect to their affective response to the body forms used to display the bathing costume.

(*groups - refers to those who saw the exhibit using one of the four costume display forms.)

4. To investigate the relationship between the viewers' cognitive responses to the exhibit and the viewers' affective responses to the body forms used to display the costume.

Hypotheses

To meet objectives one through four, the following null hypotheses were developed:

1. There is no significant difference in the museum visitors' knowledge of women's bathing costumes between those who saw the exhibit and for those who did not see the exhibit.
2. No significant difference exists among the four groups* of viewers with respect to their cognitive response to the exhibit.
3. No significant difference exists among the four groups* in affective response to the different body forms used to display the costumes.
4. No significant relationship exists between the viewers' cognitive responses to the exhibit and the viewers' affective responses to the body forms used to display the costume.

Definitions

Affective Response: Refers to responses that are related to feelings, attitudes, preferences, sensitivities, behaviours, approach

avoidance tendencies and emotions (Brown, 1979; Screven, 1976; Bloom, 1956). Affective response is operationally defined as the exhibit viewer's feelings and preferences for the costume display form used in relation to the costume displayed on it as measured by the Andrews Semantic Differential (see Appendix VIII).

Cognitive Response: Refers to responses such as facts, knowledge, concepts, principles, problem solving and cause-effect relationships (Brown, 1979; Ellis, 1978; Bloom, 1956). Cognitive response is operationally defined as facts and concepts the viewer acquired after viewing the exhibit as measured by the objective test (see Appendix VII).

Body Form: Any support system that adequately supports an historic costume without causing harm or strain to come to the garment while it is on display. Body form is operationally defined as four different types of body forms used to display the bathing costume. Included were:

a. A flat two-dimensional form constructed from foam core covered with polyester batting and muslin, cut to support the costume from the shoulders to the thighs. This method was adapted from one described by Karyn Jean Harris (1977, pp. 42-49) (see Appendices I and X).

b. A three-dimensional torso form without arms and head adapted from a method developed at the Glenbow Museum, Calgary, Alberta. The construction of the form entailed carving disks from the foam to correspond to the inside dimensions of the

costume, glueing these disks together and padding and covering the form (see Appendices II and X).

c. A three-dimensional commercial mannequin with a blank abstract face and abstract hands (see Appendices III and X).

d. A three-dimensional commercial mannequin depicting the period shape of the costume and having the corresponding facial features, makeup and hair (see Appendices III and X).

Museum Exhibit: "The presentation of ideas with the intent of educating the viewer" (Burcaw, 1975, p. 6). The idea is conveyed with the use of museum objects, labels and other auxiliary display material. Museum exhibit is operationally defined as the Women's Bathing Costume Exhibit (see Exhibit Proposal, Appendix IV; Exhibit Labels, Appendix V; and Appendix X).

Viewer/Audience: The person or persons who are the target and receivers of an exhibition, or a particular exhibit. Viewer/Audience is operationally defined as any person who was 14 years and older, who was not in an organized tour group, who was not a member of the museum staff and who saw the Women's Bathing Costume Exhibit.

Visitor: Any person coming to a museum to view the exhibits, the bookstore, theatre and the coffee shop. Visitor is operationally defined as any person who was 14 years and older, who was not a member of an organized tour group, who was not a member of the museum staff and who was visiting the museum during the data collection period, but who did not view the Women's Bathing Costume Exhibit.

Demographic Data: This is operationally defined as the age, sex,

level of education and place of residence of the viewer and the visitor as collected from the demographic questionnaire (see Appendices VI and VII).

Prior Knowledge of Exhibit Subject Matter: This is operationally defined as facts and concepts a subject possessed pertaining to the bathing costume exhibit's subject matter prior to viewing the exhibit. Prior knowledge was measured by using the objective test (see Appendix VI).

Time Spent Viewing the Exhibit: This is operationally defined as the number of seconds a viewer spent viewing the bathing costume exhibit as observed and recorded on a stop watch by the interviewer.

Frequency of Museum Attendance: This is operationally defined as the number of times a visitor or a viewer visited any museum including the Provincial Museum of Alberta in the last two years.

Historic Costume: Objects, either cut and constructed or draped, to fit on or over a human form which have been "acquired and preserved because of their potential value as examples, as reference material, or as objects of aesthetic or educational importance" (Burcaw, 1975, p. 4). Historic costume is operationally defined as one woman's blue striped wool bathing costume dating to the turn of the twentieth century. The suit is a one piece bloomer outfit with a detachable skirt, short capped sleeves, and sailor collar (see Appendix IX). The bathing costume is part of the University of Alberta's Historic Costume and Textile Study Collection.

Label: Written material in an exhibit to identify, to explain,

and to inform (Burcaw, 1975, p. 6). Label is operationally defined as the title, the introduction, panels one and two, the information on the photograph panel, and the sign in the sand panel (for a detailed explanation see Appendix V).

Auxiliary Display Material: Any supportive devices, such as mannequins, body forms, cases, lights, illustrations, photographs, audio-visual software, brochures and pamphlets that aid in the presentation and interpretation of the objects. Auxiliary display material is operationally defined as the exhibit case and its contents excluding the bathing costume and its accessories. Included was: pale yellow orange background panels, one photograph of three young women pulling in a boat on a lakeshore, cork to simulate a sand/pebble beach, drift-wood on the beach, a sign in the sand/cork, body form to support the costume and accessories (see Appendix X).

Assumptions

The assumptions of this study are as follows:

1. That the semantic differential technique is an adequate measure of the viewer's affective response to the costume display form.
2. That the objective test is an adequate measure of the viewer's cognitive response to the exhibit.
3. That the objective test is an adequate indicator of the visitor's prior knowledge of the exhibit's subject matter.

4. That all subjects will answer the questions on the demographic and objective questionnaires and the semantic differential with the same degree of conscientiousness.

Limitations

The limitations of this study include:

1. The results will not be generalizable to all museum visitors as:
   a. only one museum population was sampled.
   b. the days of the week on which the samples were chosen were selected purposively to ensure that an adequate number of subjects could be sampled.
   c. viewers unable to communicate in English were not included in the sample.
2. The results of the study are not generalizable to all types of costumes, all exhibits, all types of storylines, or all museums.
3. The results of the study are not generalizable to all methods of costume display as only four methods were tested.

Delimitations

1. The bathing costume exhibit was displayed in the main foyer of the Provincial Museum of Alberta in an area that was not easily seen nor

frequented by visitors. If visitors did stop in this area they were usually on their way out of the museum or on their way to the museum bookstore. This factor led to an increase in data collection time as fewer people than originally anticipated viewed the exhibit.

2. The exhibit case which housed the costume was small in size. This factor coupled with the fact that only one object was being presented, the location of the exhibit and the nature of the study necessitated that the researcher include only minimal written and visual information to communicate her message.
3. Due to the scope of the present study, the researcher decided not to analyse the demographic variables as independent variables in terms of cognitive and affective response.

CHAPTER 2

REVIEW OF LITERATURE

The review of literature includes five sections. The first is a discussion about museums and museum exhibits. The second section explains an approach to basic communication theory. The third looks at three different approaches to exhibit evaluation and planning. The fourth section reviews museum visitor studies that have been done to date and the last section examines costume exhibits.

Museums and Museum Exhibits

The purpose of the museum as we know it today is to collect, preserve, exhibit and interpret items for the public (Burcaw, 1975; Washburn, 1975; America's Museums, 1969; Neal, 1965). The museum has been referred to as a learning environment and an educational institution in which ideas are conveyed through the use of real objects (Brown, 1979; Burcaw, 1975; Washburn, 1975; Dixon, Courtney & Bailey, 1974; Screven, 1974b; Shettel, 1973; America's Museums, 1969; Parson, 1965). Objects in the museum context refer to items "acquired and collected because of their potential value as examples, as reference material, or as objects of aesthetic or educational importance" (Burcaw, 1975, p. 4).

The museum is not a modern concept, but rather the idea dates back to ancient Greece. As early as "290 B.C., Ptolemy I established a center of learning dedicated to the muses (hence 'museums', house of muses, 'mouseion' in Greek)" (Burcaw, 1975, p. 17). Even before this, Aristotle was using real objects as teaching aids in the schools of Athens (Burcaw, 1975). Museums have not always continued to use real objects as 'teaching aids' in the same sense as the early Greeks. Many of the early museums in the western world merely displayed their objects without attempting to explain anything about them or use them to explain a particular phenomenon (Burcaw, 1975; Neal, 1965). Even today, not all authorities agree on how the objects are to operate in the museum context, nor do they agree on a definition of the museum as a learning environment.

Learning, in general, refers to a change in performance or behaviour. Learning is biological, it expands capacities, it is involved with other human abilities such as seeing and perceiving, and it is a cumulative process (Howe, 1980). Learning in the museum environment is similar. Lakota has defined learning as "any measurable changes taking place within the visitor which can be directly attributable to the exhibit experience. These changes could include the acquisition of new knowledge, concepts, perceptual skills, or attitudes" (Communicating with the Museum Visitor, 1976, p. 249).

Lakota's definition of learning in the museum environment involves not only cognitive changes, but also affective changes and feelings. Cognitive changes have been referred to as activities such as

remembering, knowing, problem solving, reproducing and conceptual learning (Brown, 1979; Ellis, 1978; Bloom, 1956). Affective, on the other hand, refers to feelings, attitudes, behaviours and emotions (Brown, 1979; Bloom, 1956). In terms of human behaviour these two changes cannot be divided and viewed as separate entities, but rather they exist together (Arnheim, 1969; Bloom, 1956). In terms of defining museum learning and setting objectives to evaluate the exhibit, cognitive and affective changes can and are viewed separately. Not all authorities include both cognitive and affective changes in their definitions. Screven has stated that "some museum professionals in art and history museums would argue that substantive or 'cognitive' learning often is not the point, that the objectives of many exhibits are more to change 'beliefs', 'aesthetic sensitivities', 'attitudes', perspectives', 'interests', etc." (Screven, 1974b, p. 10). At least one source has stressed that learning in the museum environment is more than mere exposure to knowledge (Kurylo, 1976); it includes affective changes as well.

Bloom (1956) suggests that there are various relations between the cognitive and affective domains in learning environments. He says that the "particular relations in any situation are determined by the learning experiences the students have had" (Bloom, 1956, p. 86). Bloom exemplifies this by stating that a "set of learning experiences may produce a high level of cognitive achievement as well as great interest and liking for the subject ... [whereas another] ... set of learning experiences may produce relatively low levels of cognitive achievement

but a high degree of interest and liking for the subject" (Bloom, 1956, p.86). In the museum learning environment this may also be true.

Within the museum's informal learning environment, exhibits are the major vehicle for communicating ideas about the real objects to the audience (Parsons, 1965). Exhibits are the museum's link to the public; they are a means of telling the public what objects they have in their collection and what type of research is being done in the museum. Burcaw has defined the museum exhibit as the presentation and interpretation of objects for the purpose of communicating an idea or a message to a viewer with the use of real objects, labels and other auxiliary display material (Burcaw, 1975).

Obviously the objects are important in this context. One author has described objects by comparing them to words in schools. He states that "words are the principal educational tool of a school, whereas objects are the principal educational tools for museums" (America's Museums, 1969, p. 29). Objects provide the visitor with a first hand reference to the 'real thing'. Shannon feels that objects should speak for themselves and he does not agree with interpreting them or developing stories about them (Shannon, 1974, p. 29).

Most other sources stress or at least place some importance on the interpretation of the objects (Tilden, 1977; Dunn, 1977; Burcaw, 1975). Interpretation has been defined as "activities that responsibly explain, and/or display the collection in such a personalized manner as to make its background, significance, meaning and qualities appealing and relevant to the various museum publics" (Dunn, 1977, p. 15).

Objects are not merely displayed but are explained or are used to explain some other phenomenon in this case. Burcaw attempted to explain interpretation in exhibits by comparing an exhibit to a display: "an exhibit is a display plus interpretation, or a display is showing, an exhibit is showing and telling" (Burcaw, 1975, p. 115).

Communication of the exhibit's message to the viewer has also been stressed by several sources (Brown, 1979; Borun, 1977; Screven, 1974b; Shettel, 1973; Borhegyi, 1968, 1965). Communication in the museum environment refers to transmitting an idea or message about an object or objects through the exhibit format to the museum visitor. Exhibits attempt to relay their message with the use of two basic types of communication. Verbal communication is one type, it can either be written information in the form of labels, brochures, and pamphlets or spoken information in the form of audio devices, or live interpreters and docents. Non-verbal communication can also be used. This type includes the objects themselves, as well as other supportive display material such as mannequins in the case of costume exhibits, photographs, colours used in the aesthetic design of the display and various types of lighting.

In a museum exhibit, the objects themselves are probably the most important communicators. Objects, as already mentioned, are a unique feature of the museum that allow the visitor to learn from the "real thing". "Just as spoken language transmitted by radio and television bridges the spatial gap between people, object language bridges the gap of time" (Ruesch & Kees, 1956, p. 27). Another author

states that "the superiority of objects over words is summed up by the museum curator who said: 'Girls are more interesting than descriptions of girls'" (America's Museums, 1969, p. 10).

Communication of an idea through the museum exhibit is a difficult task to achieve. There are many factors influencing this task. The exhibit format and message must at times cater to a diverse audience (Brown, 1979). They must also cater to a specific target population such as children or adults. The exhibit has a limited amount of time to convey its message to the viewer and in this time it must attempt to attract and hold the viewer's attention as well as convey the message (Brown, 1979; Borun, 1977; Sharpe, 1976; Screven, 1974b; Shettel, 1973).

Like learning in other environments, visual learning in the museum environment depends greatly on gaining the learner's or the viewer's attention (Howe, 1980; Randhawa, 1978). Under most conditions the attention span of humans is limited (Howe, 1980, p. 18). Due to the informal nature of the museum learning environment, the attention span as well as acquisition of viewer attention is further taxed. Studies have found that the average museum visitor spends 40 seconds viewing the traditional exhibit (Linn, 1976, p. 293). Howe states that "we would be wise to ensure that instructional procedures make provisions for gaining and maintaining learners' attention" (Howe, 1980, p. 402).

The museum exhibit must also translate technical and historical information into a concise message that the target population will understand and want to receive. The message must be translated into a language the visitor can understand in terms of verbal and non-verbal

communication. Borhegyi states that "visual communication is a form of language. We must not allow it to become a dialect understandable only to our professional colleagues. If we allow this to happen, we are defeating the educational purpose of the museum" (Borhegyi, 1968, p. 47).

There are several types of exhibits used in the museum. Not all communicate ideas and interpet, although this is the ideal. At one end of the continuum there are "the 'visible storage' types of displays, much like cans on the shelves of a supermarket" (Neal, 1965, p. 229). Neal sees the basic difference between the department store display and the museum exhibit in this case as "in one instance items are accompanied by a price tag and in the other they are accompanied by a donor tag" (Neal, 1965, p. 229). At the other end of the continuum there are those exhibits that attempt to tell a story and involve interpretation.

Shettel has divided exhibits into three categories. First are "those exhibits which are intrinsically interesting. They have an important historical or psychological message embedded in them. They need nothing else but themselves to be, ... a very effective exhibit, at least in their ability to attract people" (Shettel, 1973, p. 33). Secondly, he states that there are "those exhibits which have primarily an aesthetic appeal" (p. 33), such as an art object or a mineral collection. Thirdly, there are "those exhibits which appear to have an instructional or educational role to play. These exhibits tell a story, explain a process, define a scientific principle, etc." (p. 33).

Shettel deals mainly with the third type, although he also states that it is difficult to slot an exhibit into any specific category, as the audience differs and the individual may view something entirely different from the next person.

Brown approaches the categorization of museum exhibits in another way and tends to deal primarily with exhibits that are close to Shettel's third category. Brown analyses exhibits firstly in terms of whether they are 'goal-referenced', 'open ended', or something in between. In the 'open-ended' exhibit, the designers consciously decide that no specific outcomes are expected. In a 'goal-referenced' exhibit, however, "specific outcomes are important to the exhibit designers. They expect the visitors to engage in certain activities or behaviours in the exhibit and to learn some rather specific things" (Brown, 1979, p. 5).

Brown secondly looks at exhibits in terms of whether they are 'primary experience' exhibits or 'didactic'. In a 'primary experience' exhibit there is "a concern for immersing the visitor totally in something real or in something as close to it as is possible" (Brown, 1979, p. 5). The exhibit setting may be a natural setting such as the forest or it may consist of a "primary experience gallery" where "a segment of the real world is produced artificially and becomes more abstract, more removed from reality" (p. 5). An example of this type is a natural history diorama which includes sounds, smells and objects.

A didactic exhibit, on the other hand, attempts to teach information and concepts to the viewer. "Objects and artifacts may be included in the didactic exhibit, but they are removed from their

real-world context and are to be examined for their individual uniqueness or for their generic qualities or characteristics" (p. 5).

The last criterion Brown considers is whether or not an exhibit is designed for the passive observer or the active participant. The former is what most traditional museum exhibits have been based on. In this case the visitor is seen as "someone who should look and read, not manipulate or control" (Brown, 1979, p. 5). At the other end of the spectrum, the "interactive exhibit can vary from manipulation of the objects or models of the objects themselves, to conceptual engagement and interaction with graphics and/or media. Thus, while it is not possible for visitors to interact with the delicate or with the exceptionally rare, the concept of active participation is still acceptable" (Brown, 1979, p. 5). Another source refers to these exhibits as participatory and mentions that "information is transferred only when the visitor interacts with the exhibit" (Eason & Linn, 1976, p. 46).

A review of the literature with respect to museums and museum exhibits indicates that the basic concept of the museum, the philosophies underlying the display of museum exhibits and the categorization of museum exhibit types differs from author to author, planner to planner and time to time. It appears, however, that one basic view is shared by virtually all authorities in relation to museums and museum exhibits. In any museum exhibit, there is an attempt to communicate some message, whatever it be and so Dixon et al. has stressed, in citing Brawn; "The museum is a medium of communication ...

it is primarily ... concerned with the visual communication of objects of cultural and scientific interest .... Unless the museum is able to fulfill this task it is failing its purpose" (Dixon et al., 1974, p. 1).

Communication Theory

Many authors have discussed the importance of communication within the museum environment.

Borun (1977) has stated that:

> The museum visitor can be seen as part of a special communications system in which he is the recipient of messages from staff through the medium of the exhibit. In order to know whether or not the message has been received and understood, the museum must complete the communication process by providing feedback channels for visitor response. (p. IV)

Wilbur Schram's basic models of communication can be used to explain Borun's idea. In fact, some museum researchers do use a communication system like that presented by Schram; they just do not identify it specifically as his model (Brown, 1977; Shettel, 1978; Screven, 1976; Borhegyi, 1968).

Schram states that communication always requires at least three elements - the source, the message and the destination" (de Vito, 1981, p. 3). The source or sender may include individuals or a communication organization; the message may be in the form of written words, a film, a

wink of the eye, or "any other signal capable of being interpreted meaningfully" (de Vito, 1981, p. 3); destination or receiver refers to an individual or a group, or "an individual member of a particular group we call a mass audience, such as the reader of a newspaper or a viewer of television" (de Vito, 1981, p. 3). The source/sender of a particular message must encode the message to be sent just as the destination/receiver must decode what is being sent. The roles of the decoder and encoder are interchangeable and the entire process of communication is cyclical in nature.

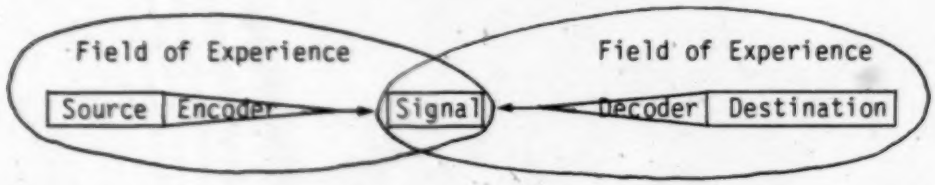
Schram's (de Vito, 1981, p. 4) basic model of human communication is as follows:

Source ⟶ Encoder ⟶ Signal ⟶ Decoder ⟶ Destination

The source or sender in the case of the museum exhibit would be the museum, or the curator and the museum exhibit committee. The message would be the idea the team is trying to convey and the destination or receiver would be the exhibit's target population or audience. Schram's basic model adjusted to the museum exhibit situation would appear as follows:

Sender ⟶ Message ⟶ Receiver

Schram also points out that the field of experience of both the sender and the receiver needs to have some common denominators in order for the message to be decoded or received (de Vito, 1981, p.5).



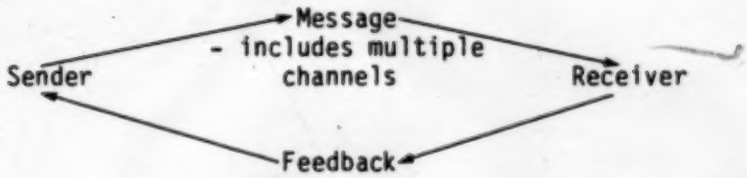
In the museum exhibit the more the curator and his message have in common with the audience such as language, educational background, knowledge of the topic, age and so forth the easier it will be to communicate the message. Most exhibit planners cannot be everything their diversified visitor population is. However, the message of their exhibit can attempt to be in tune with their intended receivers.

But how does one know if this message is in tune with the receiver? Schram suggests that feedback is an essential element in attempting to answer this question as well as an essential element of the human communication process. Feedback, as defined by L. Barker, "is a message that indicates the level of understanding or agreement between two or more communicators in response to an original message" (de Vito, 1981, p. 148).

Schram also states that "in any kind of communication we rarely send out messages in a single channel" (de Vito, 1981, p. 9). More often messages are sent out in multiple channels of a primary and a secondary nature. For instance, with respect to a museum exhibit the

primary channel may be the object(s) on display, the storyline or the words on the text panel. The secondary channel may be the placement and size of the letters on the panels, the colour schemes of the exhibit, the lighting scheme, and other auxiliary display material such as mannequins.

Including feedback and multiple channels in the model of human communication as adapted to the museum environment the diagram would appear as follows:



The communication plan within the museum environment is a total system. The system involves the entire exhibit plan from the moment it is conceived, to the time it is presented to the public, to the future when it may aid in future planning; it involves feedback from exhibit planners and more importantly from the visitor; it involves learning and teaching; it involves interpretation; it involves exhibits and display techniques; and it involves the objects. Communication within the museum environment is extremely complicated and difficult to achieve.

The following section looks at exhibit evaluation and planning which are essential to the communication system.

Museum Exhibit Evaluation and Planning

No museum exhibit planner knows for sure if his or her exhibit is communicating its intended message unless the planner obtains a response from the person or persons the message is being sent to. One source notes that "it does not suffice merely to assume that displays intended to stimulate comparisons have had that effect; they may have had unintended consequences or no consequences at all" (Henle, 1976, p. 10).

Exhibit evaluations have been attempted recently by looking at visitor response to the exhibit. Basically, exhibit evaluation is similar to other types of evaluation research. The purpose of this research is to "measure the effects of a program against the goals it set out to accomplish as a means of contributing to subsequent decision making about the program and improving future programming" (Weiss, 1972, p. 4). In the case of the museum exhibit one attempts to measure the effects of the exhibit against the exhibit goals in terms of how that exhibit was received by the visitor in order to either improve existing exhibits or to improve new exhibits.

Evaluation research is not new to the museum world. Some of the first studies were done in the 1920's and 1930's by K.W. Melton and L. Powell. Since these studies, however, little research has been done until recently.

Exhibit evaluation that involves visitor response has been approached in a variety of ways. Some studies have chosen to call in outside evaluators to assess existing exhibits by means of ex post facto

evaluation, while others have insisted on using evaluators who have been involved with the exhibit through its planning and installation stages (Brown, 1979; Screven, 1976; 1974b; Shettel, 1973). It has been suggested that ex post facto evaluations are better than nothing (Wittlin, 1979) but it has also been found that they "have almost no impact on the curatorial and design staff of the museum" (Communicating with the Museum Visitor, 1976, p. 201). The questions and objectives to be measured should be those of the exhibit planners and not those set up by an outside evaluator (Weiss, 1972, p. 6). The latter may lead to invalid results as the outside evaluator, even with the help of the exhibit planner, may never be able to recall or restate the exhibit's original goals. Weiss stresses that "unless and until the evaluator finds out specifically who wants to know what, with what end in view, the evaluation study is likely to be mired in a morass of conflicting expectations" (Weiss, 1972, p. 6).

Many of the exhibit evaluation studies to date have stressed that these goals and objectives have to be realized in the planning stages of an exhibit if the exhibit is even to attempt to communicate, let alone evaluate its success at it (Brown, 1979; Screven, 1976, 1974b; Shettel, 1973; Borun, 1977; Eason & Linn, 1976; Linn, 1976; Communicating with the Museum Visitor, 1976; Borhegyi, 1968, 1965). Shettel has stated that "well designed and articulated evaluation studies must be built into the entire development cycle and not be added on as an afterthought" (Communicating with the Museum Visitor, 1976, p. 198).

Exhibit planning involves many factors such as budgets, amount and

type of space available, time schedules, personnel required, artifacts available, and conservation requirements to mention a few. However, in terms of evaluating its success or failure the plan must also look at the audience it intends to cater to, the purpose, the storyline and message it wishes to convey, measurable instructional and behavioural objectives that it hopes to achieve, as well as at the methods it will use to present the message to its intended audience.

The exhibit planning and evaluation process has been approached in several different ways. Two methods that build evaluation into the planning stages will be looked at in this study. A third approach, the 'goal-free approach' or 'naturalistic/responsive approach' will also be considered.

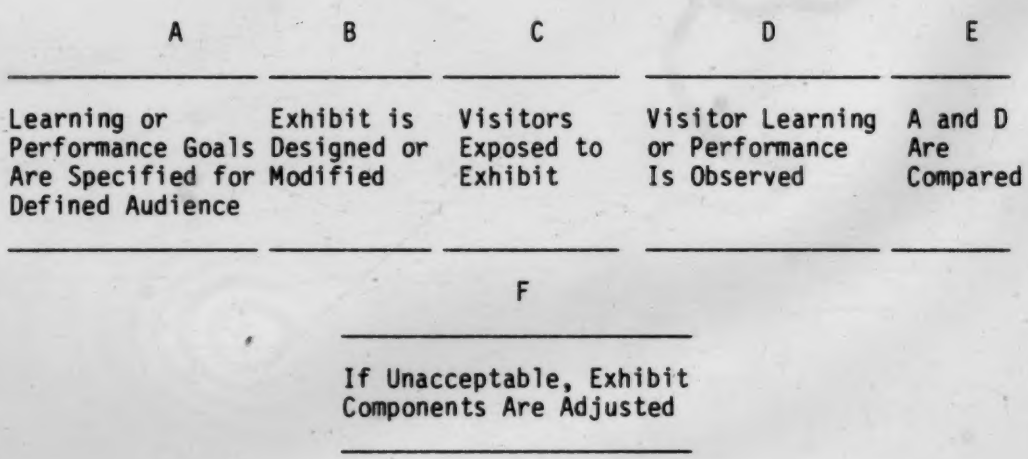
Goal-Referenced Evaluation

A goal-referenced approach to exhibit evaluation has been used by several museums and exhibit evaluators (Brown, 1979; Screven, 1976; Eason & Linn, 1976; Shettel, 1973). "This approach evaluates exhibits in terms of their intended goals and, if necessary, adjusts their design until the goals are attained" (Screven, 1976, p. 274). The emphasis in this type of evaluation is on the visitor's performance. Screven states that it looks at "measurable learning or performance outcomes shown by the visitors as the result of exhibit exposure" (Screven, 1976, p. 273).

The basis for this type of evaluation lies in the specification and articulation of exhibit goals that can be translated and broken down

into more specific measurable objectives. When the objectives are specified they are stated in operational terms identifying "things that the visitors are supposed to do (name, elect, list, order, identify, state, match, compare)" (Screven, 1976, p. 278). Screven divides these objectives into three categories of outcomes based on Bloom and Krathwohl's work on educational objectives. Cognitive outcomes include, "facts, cause-effect relationships, concepts, principles, and so forth" (Screven, 1976, p. 278). Secondly, affective changes include feelings, attitudes, preferences, sensitivities, and approach-avoidance tendencies (Brown, 1979; Screven, 1976; Krathwohl, Bloom & Masia, 1956). To exemplify this category, Screven includes "visitors having 'positive' reactions to a visit as well as changes in attitude or value toward a topic of the exhibit" (Screven, 1976, p. 278). Thirdly, sensory motor skills such as weaving are identified by Bloom but as noted by Screven "would be relatively uncommon in most museum situations" (Screven, 1976, p. 278).

In explaining the goal-referenced approach to exhibit evaluation, Screven (1976, p.274) has presented a simple flow chart which aids in describing this process:



Screven (1976) notes that not only do the exhibit components have to be modified if unacceptable but sometimes the original goals have to be adjusted as through evaluation they are sometimes found to be too ambitious.

In using a goal-referenced approach to exhibit evaluation, most sources include two different forms of evaluation: formative and summative (Brown, 1979; Screven, 1976; Eason & Linn, 1976; Shettel, 1973). Brown has defined formative evaluation as "data gathering undertaken for the purpose of providing diagnostic feedback to the design team - feedback which will be used to further shape the final form of the exhibit or environment" (Brown, 1979, p. 7). This method is incorporated into the planning stages of an exhibit and may be used to develop new exhibits as well as to correct and alter existing exhibits (Eason & Linn, 1976; Screven, 1976). Screven says the results of this type of evaluation are "used to change and improve elements of the exhibit to achieve its intended effects on visitor learning and

performance" (Screven, 1976, p. 276).

It has been stressed that "formative evaluation should also be an ongoing aspect of exhibit design" (Eason & Linn, 1976, p. 60). Screven (1976) hopes that formative evaluation will someday be the norm in museum exhibit planning rather than the exception.

Summative evaluation "takes place after an exhibit is installed, and the results establish its overall effectiveness with respect to the original goals" (Screven, 1976, p. 274). Screven (1976) suggests that one can use this method to evaluate an existing exhibit to determine if it is doing what you intended. However, "the results may not help you improve the exhibit (it may be too late for this), but they will help you decide whether to repeat its approach in the future" (Screven, 1976, p. 275).

One drawback of summative evaluation is that many existing exhibits have not been based on goals that have been translated into specific measurable objectives. Since this and other types of evaluation rely on measuring effects against goals, the exhibit planner and evaluator sometimes have to establish and remember goals long after the exhibit has been planned and installed (Shettel, 1978). The danger in this is that recalling or establishing goals may not always result in those that were originally intended, so that the results of the evaluation may not be a valid indication of the exhibit's potential.

Various methods of collecting data are used with the goal-referenced approach. They include such techniques as observations, tracking and interviews. Some sources use mock-ups to pre-validate the

exhibit (Brown, 1979; Screven, 1976; Eason & Linn, 1976). Mock-up exhibits and components range from simple low-cost facsimiles of the components in the early stages of formative evaluation, to more complex costlier models of the actual exhibit (Screven, 1976).

All mock-ups are used to pretest the exhibit in terms of its ability "to communicate the intended 'message', to motivate productive attention, to obtain positive visitor acceptance, and to bring about appropriate behaviours" (Screven, 1976, p. 285). The simplified types of mock-ups are pretested on very small samples of visitors who are asked to participate, while the most complex are set up so that visitors become voluntary participants. Screven states that the latter is "the only way to test attraction and holding" (Screven, 1976, p. 286) powers of the potential exhibit.

This system of using mock-ups has been used extensively at the British Columbia Provincial Museum by Jean Andre who has found them to be good fund raising instruments as well (Andre, 1981). Shettel also praises the utilization of mock-ups. "Since the mock-up approach lends itself to design variations, changes in the planned exhibit could be made before costly 'errors' were built into the final product" (Communicating with the Museum Visitor, 1976, p. 199).

In using the goal-referenced approach and formative evaluation the exhibit can be altered and corrected until it produces the cognitive and affective outcomes that were intended by the exhibit planners. Various components such as lettering size, readability of the labels and content may have to be adjusted as the exhibit is planned and progresses.

However, the final assessment of the exhibit's success must rely on the visitors' response. Screven (1974b) states that:

> Whichever exhibition methods (designs) are finally employed, they are evolved empirically from visitor testing. In other words, the performance of the visitors themselves validates the exhibition methods - not professional exhibit designers, educators, curators, psychologists. (p. 12)

Exhibit Evaluation and Systematic Testing of Exhibit Components

Another method of testing an exhibit's potential to communicate its intended message to the visitor is systematic testing of various exhibit components. Systematic testing of display techniques and the goal-referenced approach to evaluation are similar in form, but vary slightly in purpose. Systematic testing uses formative evaluation and the exhibit must also be based on goals and objectives, but the underlying purpose is to see how visitors respond to specific display techniques in order to determine the effectiveness of the components in communicating the exhibit's message (Parsons, 1965). The goal-referenced approach has a more general purpose of evaluating the exhibit's overall potential to communicate its message.

Normally, systematic testing is used in developing new exhibits and not on existing exhibits. Systematic testing attempts to carefully control extraneous variables by varying only the test variable (e.g.,

label format) while keeping all other variables (e.g., label content, colour scheme, location of the objects) constant. For further control Parsons suggests that exhibit variations be "tested consecutively rather than simultaneously (this has the advantage, however, using the identical display case in each)" (Parsons, 1965, p. 177). Responses are then gathered from visitors using observation methods, tracking and interviews. These responses are gathered after each change is made and then the different data for the groups are compared to see if performance and behaviour changes occur. The goal-referenced approach on the other hand, makes changes, but one cannot be sure which components are causing which effects as individual exhibit components are not tested but rather, the exhibit as a whole is tested.

The systematic testing approach to exhibit evaluation appears to be a useful method of determining which types of display techniques are most useful in communicating a particular exhibit message to the visitors (Alt, 1979; Eason & Linn, 1975; Albers, 1968; Borhegyi, 1965, 1968; Parsons, 1965). However, since the exhibit is designed to test specific variables, data gathered from it may only be relevant to that exhibit or at the most to similar exhibits. Hopefully this method will become more useful as researchers continue to use it and begin building a data base.

Goal-Free Evaluation

Some researchers advocate a less structured approach to evaluation

than the 'goal-referenced' or 'systematic-testing' approaches. In goal-free evaluation, developed by Scriven (Popham, 1974) the evaluator focuses on the activities of the subject without reference to pre-conceived objectives.

Scriven states that goal-free evaluation is less rigid than goal-referenced evaluation (Popham, 1974). He is also careful to note that goal-free evaluation is not standards-free (Popham, 1974, p. 51). "The goals of which GFE is free are the goals of the producer (or the teacher or any other person involved) which are the goals previously used as the usual criteria for evaluation" (p. 51). Scriven sees the goals in goal-referenced evaluation as a contaminating step where the evaluator is an inside evaluator and knows too well the goals of the program and as a result develops "occupational tunnel vision" (p. 34). The tunnel vision in turn leads to a narrow evaluation of the program, looking only at outcomes related to the goals.

Tunnel vision can of course be a problem in goal-referenced evaluation and indeed there should be every effort made to control for it. Screven (1976) does mention that in formative goal-referenced evaluation it is important to evaluate and adjust unacceptable or over ambitious goals and objectives of a project as planning and production proceed. If the researcher keeps an open mind to outcomes not anticipated, but nevertheless important, 'tunnel vision' may not prove to be as much of a problem as Scriven believes.

Scriven's approach to evaluation provides an alternative to the more structured goal-referenced evaluation and points out some of the

potential problems with goal-referenced evaluation. However, Scriven's approach has not been adopted in this study as the writer feels that it is important to be able to measure whether the objectives of an exhibit have been met. The writer agrees with George Kneller (Popham, 1974) when he states:

> Scriven calls for GFE on the grounds that projects often fail to achieve their goals. But unless we take these goals into account, we shall never know which projects have succeeded in their aims and which have not. (p. 64)

Museum Visitor Studies

Studies that have surveyed or observed the museum visitor have been conducted since the early decades of this century. Most of these studies have dealt with three areas: 1) visitor characteristics, 2) visitor behaviour, and 3) visitor reaction.

Visitor Characteristics

Visitor characteristics, such as the visitor's age, sex, level of education and income level have been looked at by many researchers (Andreoff, 1980; Communicating with the Museum Visitor, 1976; Dixon et al., 1974). This information has been collected to aid planners with future museum and exhibit needs. Not all of these studies have focused

only on visitor characteristics; some have also included the study of visitor behaviour and visitor reaction.

In an extensive study done by Dixon et al. (1974) characteristics of visitors to Canadian museums in all regions of Canada were looked at. The study looked at who the visitors were and what types of individuals did or did not go to museums. It also looked at behaviour in terms of how the museums are used, what factors encourage public participation and visitor reaction in terms of visitor and non-visitor feelings of museums in general, and improvements the public wished to see.

The data for the Dixon et al. (1974) study were collected using three questionnaires, the first of which was administered at the respondents' home in a personal interview and was designed to gather information on "participation in leisure activities". The second and third questionnaires were returned in the mail by the respondents. The second questionnaire was referred to as the goers, and the third the non-goers.

The Dixon et al. study was well planned and continues to be a useful piece of research for museum and exhibit personnel. The study provides extensive baseline data for further research.

A study done at the Provincial Museum in Alberta (Andreoff, 1980) is similar to that of the Dixon et al. report. Here, too, the major concern was with visitor characteristics, but in this case, the population of one museum was surveyed.

Visitor Behaviour

Another major area of concern in museum studies has been that of visitor behaviour (Communicating with the Museum Visitor, 1976; Eason & Linn, 1976; Arnell, Hammer & Nylof, 1976; Borhegyi, 1968). In these studies the researchers generally observed and tracked visitors unobtrusively on their own or with the help of various mechanical devices such as cameras. The most common behaviours included visitor traffic patterns, amount of time spent viewing or resting, how many exhibits visitors stopped at and how many visitors used the bookstore or coffee shop.

Specifically, the study done at the Royal Ontario Museum (1976) found that most of the visitors surveyed stayed ten minutes or more at the exhibition, and that most visitors observed saw every display. It was also found that many visitors were observed making their way from exhibit to exhibit in an unsystematic way and the visitors had difficulty in matching labels to the appropriate object (Communicating with the Museum Visitor, 1976). Findings such as these can be very beneficial to the visitor as well as the exhibition planning team. They are helpful in identifying such things as traffic flow problems and exhibits that are not being viewed at all.

Cone and Kendall (1978) also studied behaviour and utilized observation as one of their data collection instruments. This study looked at the movement and interaction of family groups in the anthropology hall of the Minnesota Science Museum. The study also

analysed visitor reaction, as discussed below.

Alber (1968) employed similar data collection techniques - observations and interviews - in examining visitor behaviour in relation to exhibit design (Borhegyi, 1968). The most significant results of the Alber (1968) study are presented below.

Visitor Reaction

Although the study of visitor characteristics and visitor behaviour is useful, such studies do not satisfactorily tell us whether or not and how the museum exhibit communicates its intended message. Exhibit evaluators and researchers must also gather data concerning the visitors' responses to various exhibits and exhibitions.

One study by Borun (1977) looked at three things. It attempted to: 1) develop reliable instruments for obtaining visitor response data, 2) provide useful information for the museum staff and 3) determine the "feasibility of a large scale investigation of science museums" (Borun, 1977, p. IV). The study was summative in nature. It looked at goals developed by the staff, American Science and Technology Center members and visitors. These goals were formulated after the exhibit had been completed and set up. Borun also developed a goal-rating scale that was later used to formulate objectives for testing visitor response.

Borun developed five questionnaires in multiple choice form to gather her data. The questionnaires dealt with topics of "motivation

for the visit, visitors' interest, exhibit attendance, exhibit preference, orientation" (Borun, 1977, p. VI). These questionnaires were designed to collect overall data on changes in attitude and information transfer.

The questionnaires were presented in a 'portable testing machine' set up in a study carrel with a projector. The visitor pressed buttons to record answers. Borun felt that this type of test would create a visual stimulus which in turn would encourage the visitor to give a response and also provide a pleasurable testing device as opposed to a paper and pencil test.

Borun found that on the cognitive test there was an increase in the posttest score from the pretest. This finding was different to that of many other studies such as Parsons (1965), Shettel (1978), and Eason and Linn (1975), which have found little information transfer when testing the casual museum visitor. She suggests that this difference is due to the data collection techniques used in the past.

Borun also found a decrease from pretest to posttest in attitude toward the museum which she attributes to fatigue and not to her novel data collection techniques. It is difficult to determine why she had this decrease; perhaps she was not actually measuring the original intended goals of the exhibit's initial plan.

Borun's study (1977) has identified a need for "standardized psychological tests such as the semantic differential, agreement scaling, etc." (Borun, 1977, p. 2), to elicit affective response from visitors. Borun agrees with Pierotti's conclusion "that museum visitors

are unable to directly verbalize feelings and ideas about their experience" (Borun, 1977, p. 6).

McFarlane (1977) and Dixon et al. (1974) also used a summative approach to evaluation. McFarlane (1977) based her work on the Dixon et al. (1974) study, but she concentrated on one hall of one museum only, the Museum of Anthropology in Vancouver. She was concerned with "how the museum was received at all by the museum visitor" (McFarlane, 1977, p. 2). Her data collection techinques consisted of a questionnaire - interview form and tracking observations. The sampling technique was random.

The Cone and Kendall study (1978), as already noted, used observations as well as an interview. Cone and Kendall found that there was a high correlation between "recall of an exhibit and the time spent viewing it" (Cone & Kendall, 1978, p. 248). They also found that "a family visit to a museum appears to be a social and a learning occasion. Learning from the exhibits is largely one of direct observation accompanied by explanations from parents to children, less often to each other" (Cone & Kendall, 1978, p. 258).

Formative evaluations have been attempted by some researchers recently (Brown, 1979; Eason & Linn, 1975; Screven, 1976; Shettel, 1973; Borhegyi, 1968, 1965). A few of these studies have also incorporated systematic testing of the exhibit components into their designs (Eason & Linn, 1975; Alber, 1968 in Borhegyi, 1968; Parsons, 1965).

One study by Shettel (1973) looked at how much a visitor could learn from an exhibit if the visitor was given a maximum amount of time

to view it and if he or she was highly motivated. Shettel's instruments included a test to obtain knowledge gained by the visitor and a test to measure attitudes and interests of the visitor towards the exhibit. He also included video tapes of casual visitors to determine the attracting potential of the exhibit.

Shettel (1973) interviewed and compared two groups, the casual viewer and an experimental group of paid volunteers. The latter were instructed to learn as much as possible in as much time as they needed. Shettel found that the amount of time and motivation of the viewer influenced the amount of knowledge gained. He also noted that "attitudes do not seem to be influenced by short term exposure to the exhibit" (Shettel, 1973, p. 38). Consistent with the other studies, Shettel's data also revealed that the casual viewer learned little.

Shettel concluded that exhibit objectives must be explicitly stated in 'teaching exhibits', that exhibit planners must know their target populations and that planners must present their exhibit information in a consistent order throughout the planning and development of the exhibit. Shettel has also noted that active participation in keeping with the exhibit objectives aids in the transfer of information and he found that reinforcement is necessary in a learning environment. He stated that the exhibit itself has the potential to be the reward if effectively presented (Shettel, 1973). Shettel finally concluded that "it is essential to test and revise materials before they are ready for public consumption" (Shettel, 1973, p. 41).

Screven (1976, 1974b) holds views similar to that of Shettel. He is concerned with examining learning in the museum environment as well as in specifying instructional and behavioural goals in the planning stages.

In one study, Screven (1974b) used a novel technique to collect the data. This instrument included an automatic - stop tape cassette worn individually by the visitor which was coupled with a portable punch board containing multiple choice questions (Screven, 1974b). He found that the teaching and motivational effectiveness of existing exhibits, even bad ones, can be improved by adding participatory components such as the automatic - stop tape cassette (Screven, 1976). Screven (1974b) found that one should not pretest and posttest the same visitors as "the pretest experience can affect how visitors later respond to the exhibit ... pretests can improve visitor learning" (Screven, 1974b, p. 280).

Brown (1979) worked closely with Screven in his study at the British Columbia Provincial Museum. He examined one existing exhibit that was supposed to be the focus of visitor attention. The museum staff felt that this exhibit was not achieving this goal nor did they feel it was communicating its message.

Brown (1979) approached this problem by employing a three stage evaluation and planning process. The stages included: 1) "summative evaluation of the wall exhibit's present performance" (p. 7), 2) "formative evaluation and redesign of the exhibit's graphics to increase its 'output'; if it was found to be deficient in stage 1" (p. 7), and 3) "summative evaluation of the exhibit's output after final installation

of any changes resulting from 2" (p. 7).

Brown, Screven and the museum staff worked together to establish the exhibit's intended goals; then they translated them into behavioural objectives which were used to develop data collection instruments (Brown, 1979). Recalled objectives for the purpose of evaluating may cause researchers some problems. Brown and his colleagues attempted to alleviate this problem by developing objectives from a team approach.

The instruments developed for the Brown (1979) study were observation schedules and a multiple choice test. Three groups were sampled: 1) a pretest group who had not seen the exhibit, 2) a posttest group who saw the exhibit and 3) "cued visitors" who were asked to participate and study the exhibit.

Brown (1979) found after stage one of his evaluation and planning process that the exhibit was being received poorly by the visitors. All three groups of visitors performed poorly on the cognitive test. He also found that few visitors stopped to view the exhibit, and for those who did, interaction was negligible. During the formative stage, Brown and the museum staff found that they were attempting to impart too much information which lead to a modification in the objectives.

In stage three of Brown's evaluation and planning process, the data collection instruments remained the same, but an additional visitor group was added to the survey. Instead of just a posttest group, Brown included a passing group and a stopping group. Stage three revealed that there was a significant increase in both behavioural data and cognitive scores. "The visitors tested prior to arriving at the exhibit

area answered 17% of the items correctly, the "passing" visitors achieved about 28%, the "stopping" visitors 66% and the cued visitors, 72% (Brown, 1979, p. 9). Brown concluded that a team approach was essential in developing a successful informal learning environment due to the "multi-disciplinary nature of goal-referenced design" (Brown, 1979, p. 10).

Museum visitor reaction studies are those studies that involve systematic testing in their approach (Eason & Linn, 1975; Alber, 1968; Parsons, 1965). Eason and Linn (1975) combined systematic testing with a formative approach to evaluation. They looked at participatory exhibits in which three different methods of interacting with the exhibit were included. Specifically, the test factors included: 1) visitors who experienced the machine approach, 2) those who experienced the booth approach and 3) those who experienced a combination of both.

Parsons (1965) looked at controlled testing of display techniques in an anthropological exhibit which was designed specifically for testing purposes. His three test factors dealt with "1, the kind and quality of labelling; 2, the degree of visual complexity, and 3, the use of colour as a visual aid" (Parsons, 1965, p. 169). He designed three contrasting variations of the same exhibit in which only one factor was varied in each. His data collection instrument, a three part questionnaire, was the same for all three variations.

Parsons (1965) sampled a large number of visitors (N = 2,000). This sample was not taken randomly, and he asked many people to participate in the study when attendance was low. Parsons also decided

to use a control group as an afterthought when he found that he had underestimated the prior knowledge of the museum visitor on the exhibit's subject matter. This led to revisions in the questionnaire.

Parsons only looked at frequency distributions in his study and did not include a statistical analysis of the data. He found that the formal didactic exhibit was slightly preferred by visitors, that visual complexity was highly favoured and he found that either colour scheme was just as effective in communicating the message (Parsons, 1965). In his final analysis Parsons stated that "traditional 'organized clutter' and an emphasis on the specimens rather than a coloured background may actually have a greater appeal to the majority of visitors to natural history museums" (Parsons, 1965, p. 188).

Alber (1968) conducted a study similar to Parsons. Alber tested two factors, "visitor traffic patterns and arrangement of materials within an exhibit case" (Borhegyi, 1968, p. 105). Alber (1968) found that "those who approached the case from the left learn more than those who approach the case from the right" (Borhegyi, 1968, p. 137). Alber also stated that this is not a sound conclusion. He stated that his findings and his analysis are more important in pointing out the need to test museum exhibits and the difficulties in testing and collecting visitor response data in the museum environment.

Although no museum visitor studies have been found to date that include visitor response to costume exhibits, the last section of the review of literature will include a discussion about costume exhibits. It will look at a definition of costume exhibits and the conservation

and communication requirements of the costumes.

Costume Exhibits

An historic costume is an object that has been cut, constructed and sewn, or that has been draped to fit either on or over a human form. Like other museum objects, historic costumes are usually "acquired and preserved because of their potential value as examples, as reference material, or as objects of aesthetic or educational importance" (Burcaw, 1975, p. 4). The actual costume may also be accompanied by various accessories such as shoes, stockings, jewellery, belts and gloves.

Historic costumes in various private and public collections are often stored and conserved as examples of our past heritage and as examples of past techniques and materials. The costumes may be used for study purposes, but many are also displayed in exhibits.

Like other museum exhibits, costume exhibits have a wide variety of themes and purposes. They range from displays of and about the costumes themselves to displays of costumes with other objects describing the history of a particular town or a particular social phenomenon. Also, like other museum exhibits, costume exhibits are planned with respect to budget and time constraints, the target population they intend to reach, aesthetics, the message they are trying to convey and the important conservation requirements they must meet.

Unlike other museum objects such as household appliances,

furniture, garden tools, historic costumes often require more preparation and planning to physically display them. Due to their physical construction they require close scrutiny on the part of the conservator to ensure their safety while on display. Since costumes were created to fit either on or over a human form they require consideration and cooperation on the part of the designer, curator and conservator as to the best method of communicating this message and with the best physical support. No costume exhibit planner knows for sure which approach, if any, aids in communicating the exhibit's message.

Conservation Requirements

Naturally, conservation requirements of the costume to be displayed are important. Conservation has been defined as the protection and preservation and the maintainence of "any objects or structures which because of their history, significance, rarity or workmanship have a commonly accepted value and importance for the common good" (Charter of the International Institute for Conservation of Historic and Artistic Works, cited by R. Buck, Museum News, 1973). This definition also applies to the care and maintenance of historic costumes and must be of the utmost concern when planning an exhibit (Arnold, 1980; Finch, 1977; Harris, 1977). Extreme care and preventive measures must be taken to ensure the safety of the costumes while on display. They must not be exposed to any unnecessary dangers that would further deteriorate them and jeopardize their potential as museum objects.

Some historic costumes can never be displayed, due to their weight, their condition, their size and sometimes their construction (Harris, 1977; Finch, 1977). Care should be taken to choose only those that can withstand display procedures, as even the most rigorously controlled display can accelerate deterioration of a costume. Costumes that can be exhibited should only be displayed on a temporary basis and should never be on exhibit permanently (Arnold, 1980; Harris, 1977; Finch, 1977).

Safeguards must be incorporated to ensure that the costume is not exposed to excessive amounts of dust that can be abrasive to the fabric, or to copious amounts of strong light (especially ultra violet) that can fade, weaken and further deteriorate the object. The former can be prevented by displaying the costume in a case that is properly ventilated (Arnold, 1980; Harris, 1977), or exhibiting the costume for short periods of time and covering it when it is not being viewed (Harris, 1977). The latter can be alleviated by preventing exposure of the costume to daylight, or other ultra violet sources by keeping the intensity of the light in the display area low, with the use of ultra violet filters and by excluding lights when the exhibit is not being viewed. Controls on temperature and humidity must also be checked and fluctuations of the two should be kept to a minimum. Ideally the exhibit environment should be cool and relatively dry.

Precautions must also be taken to safeguard the costume while on display against handling, food and smoking. Food and smoke can harm the costume and excessive handling, as well as body oils and dirt from

hands, are detrimental. If a case is not used, some other type of barrier, either physical or psychological, must be used to protect the costume from the visitor. Some authorities have found in their studies that participatory exhibits (Screven, 1976; Eason & Linn, 1975), and exhibits that directly expose the visitor to the tactile and the visual sense of the object (Sharpe, 1976), are the best methods of communicating the exhibit's message. Due to the conservation requirements of historic costumes, it is difficult to employ this philosophy unless the costume itself is not the object of the participation or the costume is a replica.

Besides environmental precautions, costume exhibit planners must consider conservationally sound methods of physically supporting the costume while on display. This measure is also utilized to ensure the safety and longevity of the costume. Display methods will be discussed below.

Communication and Costume

Communication requirements of the costume are equally as important as the conservation requirements and often more difficult to determine than for other objects. Naturally, all museum objects are difficult to present so that they effectively communicate the intended message. Many variables must be combined so as to attempt to achieve the desired effect. These include the placement of the object, the colour of the background and the size and complexity of the labels. Since the costume

requires a support for conservation reasons as well as for structural reasons inherent in its purpose, the task of communicating with historic costumes is further complicated with yet another variable - the costume display support.

Like other museum objects, historic costumes do convey information. Ruesch and Kees (1956) call this object language. They stated that "just as spoken language transmitted by radio and television bridges the spatial gap between people, object language bridges the gap of time" (Ruesch & Kees, 1956, p. 27). In other words, historic costumes can be used to convey information about what past generations have worn, styles of a particular period, fabric and construction techniques used in the past.

Despite the various messages historic costumes are capable of conveying, they have all been originally constructed to communicate a message via the human form. With regards to costume history, Hollander noted that "for six centuries fashion has perpetually re-created an integrated vision of clothes and body together" (Hollander, 1978, p. 85). Keeping this in mind, is it possible to display a costume on anything but a human form? Conservationally and physically speaking it is possible and is in fact done by costume exhibit planners all the time. Costume display methods range from tacking the costume with thread flat to a background, to suspending it on a padded hanger, to draping it over a bamboo pole. Theoretically speaking, exhibiting a costume on anything but a human form may put it out of context. A review of the literature reveals nothing to date as to whether or not

anything but a realistic human form does communicate the exhibit's message or if this is even a factor.

Harris (1977) indicated that the relationship between the historic costume and the human form is important. She stated that "a tremendous amount is lost in an exhibit if the clothing is not interpreted as it would have looked on the human body at a particular time" (Harris, 1977, p. 3). In the same book she has described and endorsed a flat treatment for displaying bathing suits, tee shirts and other knits (Harris, 1977, p. 42). She indicated that this method provides "a relatively inexpensive support for many other types of costumes that do not need a form with extensive shaping for understanding the silhouette of the garment" (Harris, 1977, p. 43). Although this method is conservationally sound, a tee shirt displayed on a flat form can hardly indicate the silhouette of the garment when such a garment depends on the human body with corresponding undergarments of the period to illustrate the intended form.

Neal on the other hand suggested that "the ultimate costume display is that which uses no figure at all" (Neal, 1976, p. 116). In this method she suggested that the costumes be pinned to the wall (Neal, 1976), which is not in keeping with proper conservation procedures (Finch, 1977). At the other end of her continuum she suggested a very realistic mannequin. Many of her evaluations of types of mannequins are based on her own aesthetic judgments, although at one point she has briefly mentioned that "the major function of any form is to show clothing as it appears in motion on a living form" (Neal, 1976, p. 116).

The form she was describing in this case, was a wooden stick man form.

Despite this diversity in display methods, many costume display and history authors agree that there are specific silhouette patterns that clothing falls into throughout history (Arnold, 1980; Hollander, 1978; Harris, 1977; Laver, 1969). They agree that the human figure, especially that of women, has been shaped to fit the changing clothing styles and subsequently the changing silhouettes throughout history. Hollander states that "changes in fashion alter the look of clothes, but the look of the body has to change with it" (Hollander, 1978, p. 85).

Many costume exhibit planners do consider body form as an acceptable method, but do not display their costumes on forms with heads or limbs. Arnold (1980, p. 159) ponders whether the models should have heads, but she has no conclusive answers. Other planners display their costumes on forms without features or hair.

The reasons for these decisions lie in the minds of the exhibit planners, and are probably related to aesthetic design, to availability of materials, money and forms as well as to conservation requirements of the costume. One suggested reason that has been found to date concerning this issue states that "some people feel that a realistic face detracts from the costume" (Harris, 1977, p. 24). This is only an opinion and there are no empirical data to explain why one should use this suggestion in the decision making process when choosing a method of costume display. Similarly, Turnbull (1982) provides many suggestions as to the best methods of costume display but her report contains no empirical evidence.

Clearly, there are conflicting opinions as to which method may facilitate communication of the costume message. Many of the views are held by curators, conservators and designers but none to date indicate which method is most favourable to the museum visitor or which method aids in communicating the exhibit's message.

CHAPTER 3

METHODOLOGY

This chapter includes the theoretical framework of the study, the procedure of the study, the selection of the sample, the sampling procedure, a description of the data collection instruments and methods of data analysis.

Theoretical Framework

The methodology for this study was adapted from essentially three related areas of research: 1) basic communication theory, 2) a goal-referenced approach to evaluation similar to that used by Screven and 3) systematic testing of exhibit variables.

The basic structure of the study was built on Schram's communication model, as described above. The exhibit planners are the senders of the message; the visitors are the intended receivers; the study examined the visitors to determine whether and how the message was being received. The study focused on measuring visitor feedback.

In order to measure the feedback in this particular study, the researcher has drawn from both systematic testing studies and goal-referenced approach studies. Studies involving systematic testing

Eason & Linn, 1976; Alber, 1968; Parsons, 1965) have taken an exhibit variable and altered it consecutively within one exhibit (Parson, 1965; Alber, 1968) or simultaneously within two or more exhibits (Eason & Linn, 1976) to determine how that variable aided in communicating the message and how it was received affectively by the visitors. Systematic testing allows extraneous variables to be controlled while the test variables can be monitored. The consecutive approach, used by Parsons for example, allows for the most control and accordingly, it has been adopted.

Parsons used an objective test to determine if the visitor understood the exhibit's message using a given display technique and he used an opinion questionnaire to determine the visitors' feelings toward the particular exhibit. Like Parsons, the researcher for the present study has used an objective test to study the subjects' cognitive responses to the bathing costume exhibit. However, this study has not used an opinion questionnaire to measure the viewers' affective responses, as it has been found that subjects often have difficulty in providing an accurate expression of their feelings in such a test (Borun, 1977).

It has been found that the use of a semantic differential can be an effective means of measuring affective feelings (Brown, 1977; Screven, 1974b; Shettel, 1973) and that this instrument is easy to administer. For these reasons the researcher has used a semantic differential to measure affective response.

A third aspect to the methodology of this study relates to the

basic approach which underlies the goal-referenced theory, namely, that exhibit evaluation is an ongoing process and ought to be part of the planning process from the beginning stages of the exhibit proposal. This study takes an approach to evaluation much like that advanced by Screven by developing and testing an exhibit with set exhibit goals and measurable objectives, as opposed to testing an existing exhibit.

Procedure

The procedure for this study was as follows:

1. The basic goals and plan for the exhibit were developed.
2. The preliminary program and storyline script for the exhibit were developed and presented to the Provincial Museum's Exhibit Committee for feedback.
3. The feedback was assessed and necessary changes were made to the preliminary plans.
4. The goals were translated into measurable instructional and behavioural objectives, stated in operational terms as to what the visitor was supposed to do as a result of seeing the bathing costume exhibit.
5. The detailed program and storyline of the exhibit were developed and presented to the Provincial Museum's Exhibit Committee for feedback.
6. The feedback was assessed and necessary changes were made to the

program and storyline.

7. A scale model of the proposed exhibit including the colour scheme, picture and panel layouts, mannequin placement, and inclusion of sand and other beach props was prepared and presented to exhibit designers within the Provincial Museum.
8. Feedback from the designers was assessed and necessary changes were made to the exhibit plan. These changes included changing the colour scheme and reducing the number of pictures and text panels as the exhibit appeared too cluttered. This in turn necessitated changing the storyline to a concise version of the original text.
9. The instructional and behavioural objectives were reviewed and necessary adjustments were made following changes in the overall exhibit plan.
10. The objective test was designed following the established instructional objectives. The initial test included three versions of each question which were submitted to a group of six judges along with the exhibit labels and objectives. The best of each question was then compiled to form the objective test.
11. The exhibit was installed in the southwest wing of the main foyer beside the museum bookshop of the Provincial Museum.
12. The instruments, including the demographic questionnaire, the semantic differential and the objective test were pretested on a small sample of museum visitors in the provincial museum.
13. Changes were made to the instruments to clear up problems that

arose in the pretest.

14. Four different costume display forms were used in the same exhibit consecutively.

Selection of the Sample

The sample was divided into a pretest group and a posttest group with the latter being divided into four subgroups, each of which viewed only one of the four different body forms. Both groups included an accidental/purposive sample of museum visitors who were 14 years of age and older, who were not in an organized tour group and who were not members of the museum staff. These criteria were set because the data collection instruments were geared to the individual visitor of the previously mentioned age group and also because the study could not sample all groups. Only those visitors who were near the Bathing Costume Exhibit area were sampled. The sampling was conducted primarily on Saturdays, Sundays and Mondays during the month of August and the first weekend in September, 1982.

The justification for employing a sample of this nature is based on several factors. A pretest and a posttest group were used as the researcher wished to obtain response from the casual visitor. It has also been found by Screven (1974b) that one should not pretest and posttest the same visitor as the "pretest can improve visitor learning" (p. 20) which would skew the results.

Secondly, an accidental/purposive sample selection method was used to insure that at least 25 respondents per posttest subgroup and at least 30 respondents for the pretest group could be obtained in the allotted time that the exhibit was on display. It was originally thought that the first subject for each sampling session could be selected randomly and then every third subject after that would be sampled until the desired number of subjects was obtained. Due to the low visitation rate it was soon found that this system had to be changed to include the first subject to the area and every other subject after that which essentially constitutes an accidental sample. The sample was purposive in the sense that cases were handpicked so as to include only those visitors and viewers who were over the age of 14, not in an organized tour group, nor a member of the museum staff and English speaking. This selection system was employed for purposes of obtaining equivalent pretest and posttest groups.

Thirdly, Saturdays and Sundays were chosen as the sampling days to ensure that the same days would be used throughout the sampling procedure which in turn may aid the researcher in obtaining equivalent groups. Weekends were also chosen as previous studies (Dixon et al., 1977; Parsons, 1965) have found higher visitation occurs on these two days than on other days. However, it was found that, as data collection began, another day of sampling had to be included as a sample of 25 viewers was not guaranteed on only weekend days considering the location of the exhibit within the museum and the fact that, the researcher had to collect all of the posttest data. It was decided that Monday be

included as a day of sampling.

It was realized by the researcher that by utilizing the above selection of the sample the data collected could only be generalizable to a particular segment of one museum population. Due to the nature and size of this study this problem could not be alleviated.

Sampling Procedure

Pretest Group

Data for the pretest group were collected by a trained volunteer interviewer on one Saturday and one Sunday during the hours of 11:00 a.m. and 5:00 p.m. These two days were days when posttest data were being collected at the same time. Beginning with the first hour of the day on which subjects were sampled, the interviewer selected the first subject who passed Point X (a location in the front entrance of the Provincial Museum that was in the vicinity of the swimwear exhibit) and who appeared to be at least 14 years of age and who was not with an organized tour group or school group, to be interviewed. If the subject was willing to participate the interview took place. It was hoped that each interview would not take longer than ten minutes.

After the interviewer completed all necessary notations for the first interview, the next subject meeting the above requirements was approached and interviewed. In the event the visitor refused to

participate in the interview, the interviewer waited for the next eligible visitor to cross Point X to be interviewed.

If once the interview was in progress and the interviewer discovered the subject was younger than 14 years of age or was a member of the museum staff, the interview was continued, but that interview was not counted in the sample. Each interview took approximately six to eight minutes to complete.

Posttest Group

Subjects were sampled on Saturdays, Sundays and Mondays between the hours of 10:30 a.m. and 5:30 p.m. for the posttest group. Data for this group were collected by the researcher. The sampling procedure for the posttest group was essentially the same as for the pretest group with the exception of timed observations of subjects viewing the exhibit. Beginning with the first hour in which subjects were to be sampled, the interviewer selected the first viewer who was observed viewing the exhibit. The amount of time a viewer spent looking at the exhibit was recorded on a watch by the interviewer. When the viewer was finished viewing the swimwear exhibit, the interviewer approached him or her to be interviewed.

After the demographic and objective sections of the interview were completed, the viewer was asked to complete the semantic differential on his or her own while viewing the exhibit. When the viewer had returned the semantic differential to the interviewer, and

when the interviewer had completed all of the necessary notations the interviewer was ready to observe the next viewer who was looking at the exhibit and thus the sampling procedure began again.

Description of the Instruments

Demographic Questionnaire

A demographic questionnaire was constructed to collect data pertaining to the visitors' and the viewers' frequency of museum attendance to any museum and specifically to the Provincial Museum of Alberta, age, sex, level of education and place of residence. This information was gathered for purposes of providing a comparative profile of the five groups of visitors.

The demographic questionnaire was based on part of a questionnaire developed by the Canadian Facts Co. Ltd. for the Dixon et al. (1977) study. A few minor changes, additions and deletions were made in order to adapt this instrument to the present study (see Appendices VI and VII).

Objective Test

An objective test consisting of eleven multiple choice questions was developed specifically to measure the subjects' cognitive response

to the bathing suit exhibit information. The pretest and posttest versions of the objective test were very similar except for a few differences necessitated because the pretest group had not seen the exhibit (see Appendices VI and VII). Questions were designed to correspond to the needs of the instructional objectives of the exhibit as well as to the needs of the study.

Initially, three versions of each question were developed for the pretest and posttest and a list of all of these questions was given to three judges to examine. After this preliminary examination minor changes were made to the list of questions which was then presented to six judges to rate. The judges were also given the storyline of the exhibit and the instructional objectives. The judges rated the three versions of each question according to the following criteria:

1. clarity of question;
2. relationship of the question to the exhibit objectives;
3. adequacy of the detractors for each multiple choice question;
4. ability of respondents to answer the question (i.e., the test would be administered to the average visitor over the age of 14).

Kendall's coefficient of concordance (W) was used to determine the agreement among the judges in selecting the best question. "A high or significant value of W may be interpreted as meaning that the observers or judges are applying essentially the same standard in ranking the objects under study" (Siegel, 1956, p. 237). Agreement in

this study was found among the six judges on 11 out of 18 questions at the .05 level.

Following the Kendall's analysis, questions to be presented on the pretest and posttest were chosen by selecting the variation of the question that was chosen most often by the judges. The questions that were not shown as significant after the Kendall W test were reevaluated, necessary changes were made and a choice was made by the researcher and two other judges as to the best type of question. Two questions were also added to the test as a result of advice given by the judges and the researcher's project advisors.

Following this procedure, the objective test was pretested on a small sample of museum visitors including 20 pretest visitors and 11 posttest viewers. A few more changes were needed and then the objective test was ready for data collection. The final edition of the objective test consisted of eleven multiple choice questions, each having only one correct answer. The number of choices per item varied between four and five (see Appendices VI and VII). The scoring procedure developed to tabulate the data collected for the objective test was essentially a system where each correct answer received two points and each incorrect answer received no points. The possible range was 0 - 22.

A Kuder Richardson 20 test of item-total test reliabilty was performed on the objective test scores of 130 subjects after all of the data were collected. This test yielded a moderate reliability coefficient of .54. The item analysis of the objective test also indicated that five out eleven questions were relatively easy in terms

of difficulty.

Andrews Semantic Differential

A semantic differential was developed to measure affective response pertaining to the viewers' feelings about the four different costume display forms that were used to display the bathing costume. The semantic differential is "a method of observing and measuring the psychological meaning of concepts" (Kerlinger, 1973, p. 566). This method was developed in the 1950's by Charles Osgood, George Succi and Percy Tannenbaum and it has continued to see widespread use in social and psychological research as well as in marketing and in such areas as non-objective art (Springbett, 1960).

Basically, the semantic differential measures people's reactions to things in terms of ratings on scales defined with contrasting adjectives at each end (Heise, 1969). Subjects are asked to rate specific concepts (e.g., father and teacher) on seven point equal interval scales.

Example:

Concept: Father

Scales: Good___:___:___:___:___:___:___Bad

Fast___:___:___:___:___:___:___Slow

Hot ___:___:___:___:___:___:___Cold

The scales are presented in random order (i.e., positive ends are mixed with negative ends - e.g., Good - Bad, Awful - Nice) in an attempt to increase validity (Osgood et al., 1957).

The semantic differential technique was chosen to collect data on viewers' feelings for this study for the following reasons:

1. It has been noted by other researchers in the museum field that the collection of response data relating to the visitors' feelings is difficult as the visitor often has difficulty in expressing his or her true feelings in words (Borun, 1977; Screven, 1974b; Shettel, 1973). The semantic differential has been suggested by many of these same researchers as an effective method of affective response data collection as it provides the visitor with adjective scales to rate concepts.
2. The semantic differential is a quick and efficient method of data collection, which is an essential factor in the museum environment as one does not want to unnecessarily prolong the interruption of the casual visitor for a long interview.
3. The information collected is readily quantifiable.
4. The information collected for large groups, such as in this study, not only indicates the direction of viewers' feelings but also the intensity of their feelings about the various costume display forms.
5. The semantic differential avoids stereotyped responses.
6. The semantic differential eliminates the problem of ambiguity in question phrasing.

7. Although a specific reliability coefficient was not determined for the semantic differential developed for this study, it was found in general that the semantic differential method is a sufficiently reliable and valid method for many research purposes (Kerlinger, 1973; Heise, 1969; Osgood et al., 1957).

A semantic differential consisting of 15 scales was developed for this study. The concepts used with these scales were the four different costume display forms. These concepts were presented visually to the viewer, rather than in written form as was the case in the Osgood et al. (1957) original work.

Osgood et al. found that there were three main factors, Evaluative, Activity and Potency, underlying the scales that he and his colleagues devised. These factors are clusters of adjectives that essentially measure the same thing. The Evaluative factor consists of word pairs that express positive and negative or good and bad feelings. The Activity factor includes adjectives that illustrate motion and action and the Potency factor illustrates the strength of a particular idea. The factors can be determined by using factor analysis of the data yielded by the scales. It has been advised that in constructing a semantic differential one should attempt to use scales that have a known factorial identity and if scales cannot be used that conform to this criteria one "should attempt to determine the factorial identity of the scales" (Kerlinger, 1973, p. 571). It is possible to have a semantic differential that has only one common factor. Most commonly found in the social sciences is the Evaluative factor. It is also possible to

define factors other than those used by Osgood et al. such as Familiarity.

Factorial complexity and type of factors used depends largely on the research project and questions to be answered. For purposes of this study it was felt that the Evaluative, Activity and Potency factors were important in determining the visitors' feelings toward the body forms. The Evaluative factor was employed in order to ascertain postive and negative feelings about the body forms by the viewer. The Activity factor was employed to determine whether or not the body forms were considered to be generally active as opposed to passive, as an active pose was one of the goals of the exhibit. The Potency factor was employed to determine the viewers' feelings about the strength or importance of the body forms. After the data were collected for this study, factor analysis was performed to determine exactly which scales clustered together to form factors and how many factors actually existed.

Scales were developed that would correspond to the above three factors. Some of the scales for the present semantic differential were taken from the Osgood et al. (1957) scales, while others were developed specifically to relate to this study and to the goals of the swimwear exhibit. The original list of scales consisted of 30 word pairs that were thought to be relevant to the present study. These scales were arranged randomly and then pretested on a convenience sample of academic and non-academic staff members as well as students from the Faculty of Home Economics. A temporary exhibit using the costume to be presented

in the actual exhibit was developed for pretesting purposes.

After the pretest it was found that many of the 30 word pairs were irrelevant to this study and had to be eliminated. A second pretest was conducted. The new list consisted of 20 word pairs, many of which were on the original list. After the second pretest the list of scales was further pared down to 15 scales (see Appendix VIII). It was also found in pretesting that the semantic differential took from one to two minutes for each subject to complete.

The semantic differential was part of the posttest interview. It was presented to the viewers with a brief explanation and then the viewers were instructed to complete the semantic differential while looking at the costume display form in the exhibit.

The scoring procedure developed to tabulate the data collected for the semantic differential consisted of assigning numbers from one to seven to each of the points on the 15 scales. Number one being closest to the favourable end of the scale and number seven being closest to the unfavourable end of the scale and number four being the mid-point or neutral point on the scale.

Example:

Attractive ___:___:___:___:___:___:___Unattractive

1 2 3 4 5 6 7

Favourable and unfavourable were determined by the researcher in terms of the problem being addressed in this study. The score for each scale

was then easily determined. The total score for the Andrews Semantic Differential was determined by summing the scores of all 15 scales given to each viewer, whereas the score for each of the three factors was determined by summing only those scales that were found to cluster with each factor. Each scale was also looked at as an individual score.

The possible ranges for the Semantic Differential varied depending on the number of scales involved. The possible range for the total score on the Andrews Semantic Differential which included 15 scales was 15 - 105. The possible ranges for each of the three factors were 5 - 35 for the Evaluative factor which included five scales, 5 - 35 for the Activity factor which included five scales and 2 - 14 for the Potency factor which included two scales. The other three scales used in the total score on the Andrews Semantic Differential were not used in the factor scores as they did not cluster with any one factor. The possible range for each scale was 1 - 7.

Analysis of Data

Parametric statistics were chosen for purposes of data analysis in this study. This choice was made for the following reasons. The measures to be analyzed in this study are "continuous measures with equal intervals" (Kerlinger, 1973), and according to Kerlinger (1973) parametric statistics rely on this assumption, but many nonparametric statistics do not. Nonparametric statistics are usually used when

nominal or ordinal scaling is used and parametric statistics are used when at least interval scaling is present.

Secondly, there was no evidence in the early stages of this study to suggest that the populations to be sampled would be non-normal or heterogeneous. Kerlinger states that unless there is strong evidence to indicate that these two conditions are present, "it is usually unwise to use a nonparametric statistical test in place of a parametric one" (Kerlinger, 1973, p. 287). The reason for this is that "parametric tests are almost always more powerful than nonparametric tests" (Kerlinger, 1973, p. 287).

One-way analysis of variance was used to test the differences among the various group means in Hypotheses 1 to 3. The Pearson product moment correlation was used to determine the relationship between the viewers' cognitive responses to the exhibit and the viewers' affective responses to the body form used to display the costume. Factor analysis was used to determine clusters of intercorrelated variables on the Andrews Semantic Differential.

The dependent variables in this study were affective response and cognitive response, while the major independent variable was costume display form and its various levels. An alpha level of .05 was set for all statistical analyses in this study.

CHAPTER 4

Findings and Discussion

This chapter includes findings from the data collected from the administration of the pretest and posttest structured interviews. These findings will be discussed with reference to the objectives of the study and the related literature. The findings and discussions will be presented in four sections within this chapter. The sections include the demographic findings, cognitive response, affective response and the relationship between cognitive and affective response.

Demographic Findings

The distribution of visitors within the five respective groups was analysed in terms of age, sex, education, residency and frequency of visits to museums. In the case of each of these variables the data were compared with another study in order to determine if the sample was typical of the population in which the researcher was interested.

All of the demographic variables except frequency of visits to museums were compared with the Andreoff (1980) study. The variable frequency of visits to the Provincial Museum of Alberta and to museums in general was not included in the Andreoff (1980) study. Dixon et al. (1974) included frequency of visit in their study but the data were reduced and presented in a manner that makes it difficult to make any meaningful comparison. Hence, no comparison could be made with the

findings in this study for frequency of museum visit.

Also included in the demographic findings is an analysis of the length of time viewers spent viewing the exhibits. While these data were not strictly demographic in nature, they do partially describe the sample. Because the length of time spent viewing the exhibit may also be a reflection of affective and cognitive response, these data will be discussed in the context of following sections as well.

The sample for the study consisted of 130 subjects visiting the Provincial Museum of Alberta during the month of August, 1982 and the first weekend in September, 1982. The pretest group included 30 visitors who did not see the exhibit, while the posttest group consisted of 100 viewers with 25 viewers viewing each of the four body forms used in the exhibits.

Age of the subjects ranged from the category 14 - 19 years to 65 and over. The specific age distribution of subjects within each of the five groups is presented in Table 1. The findings indicated that Group 0 (pretest group) had a higher percentage of visitors in the 50 - 64 year age group than in any other age group within Group 0, but a similar distribution in the other age groups to the general distribution. Group 1 (those that viewed the flat form) had a low percentage of subjects in the 14 - 19 age group and no subjects in the 65 and over age group and the highest percentage of subjects in the 40 - 49 year age group. All other age groups in Group 1 were similar to the other pretest and posttest groups. Group 2 (those that viewed the torso form) had a very low percentage of viewers in the range of 25 - 29 years, yet the highest

percentage was found in the age range of 50 - 64 years. Group 3, on the other hand, had a very high percentage of subjects within the range of 14 to 29 years and a very low percentage from 35 - 64 years, thus making it a characteristically young age group. Group 4 (those that viewed the period mannequin) had a high percentage of subjects at the extreme ends of the age spectrum and a similar distribution to the general distribution for other age groups.

Table 1: Percentage Distribution for Age of the Subjects in the Five Groups (n=130)

		Age Category (years)							
Group		1	2	3	4	5	6	7	8
	n	14-19	20-24	25-29	30-34	35-39	40-49	50-64	65+
0 Pretest	30	6.7	20.0	10.0	10.0	13.3	6.7	26.7	6.7
1 Posttest	25	4.0	16.0	16.0	12.0	16.0	16.0	20.0	0.0
2 Posttest	25	8.0	20.0	4.0	12.0	12.0	12.0	28.0	4.0
3 Posttest	25	16.0	24.0	24.0	12.0	8.0	0.0	8.0	8.0
4 Posttest	25	12.0	12.0	16.0	12.0	12.0	8.0	8.0	20.0
Total	130	9.2	18.5	13.8	11.5	12.3	8.5	18.5	7.7

The age distribution in the present study was compared to the August portion of the Andreoff (1980) study (see Table 2). The comparison indicates that the two distributions are relatively similar, with approximately 50% of the visitors in the age group of 20 - 40 years, 10% in the age range of 14 - 19 years and 40% over the age of 40.

Table 2: Percentage of Subjects by Age Category Compared with the Andreoff (1980) Study

Age	Andrews (1982) n=130	Age	Andreoff (1980) n=404
14-19	9.2	14-20	13.1
20-24	18.5	21-25	---
25-29	13.8	26-30	---
30-34	11.5	31-35	47.5
35-39	12.3	36-40	---
40-49	8.5	41-50	11.4
50-64	18.5	51-65	14.9
65 and over	7.7	65 and over	13.1

The sex distribution for subjects within each of the five groups for the present study is presented in Table 3. In general, Groups 0, 1 and 2 had relatively equal proportions of males and females which is consistent with the Andreoff study. However, Groups 3 and 4 had a disproportionate percentage of females, with the females outnumbering the males by approximately three to one. This means that the groups viewing the abstract and period mannequins were characterized by predominately female viewers. Upon performing chi-square analyses on the data it was found that the variable sex did not correlate significantly with either the cognitive or affective variables. Therefore, the researcher feels the disproportion in Groups 3 and 4 will not distort the results of the hypothesis tests.

Table 3: Sex Distribution of Subjects in Each of the Five Groups (n=130)

		Sex	
Group	n	Males	Females
0 Pretest	30	14	16
1 Posttest	25	12	13
2 Posttest	25	12	13
3 Posttest	25	6	19
4 Posttest	25	7	18
Total	130	51	79

For the education variable no major differences were found to exist among the five groups of subjects. Each group had a similar distribution and range with the mode in each group for the total sample being the category of 'graduated from high school'.

These findings are generally consistent with the Andreoff study. Andreoff found 58% of his sample had some college education or better, while the present study found that 49.3% had some college education or better.

For the variable residency, the groups in the present study were similar in distribution. The majority in each group consisted of a relatively local population (see Table 4). In each group, at least 64% were from the province of Alberta, and at least 40% were from Edmonton. Although the groups were similar, it is worthy to note the difference between those from Edmonton and those from other parts of Alberta.

Group 0 had 70% of its subjects coming from Edmonton and Groups 3 and 4 had 40% from Edmonton. However, these three groups had a similar distribution of non-Edmontonians. Whereas, Groups 1 and 2 had an average number of subjects from Edmonton, but very few subjects from the rest of Alberta.

Table 4: Percentage of Subjects by Residence in Each of the Five Groups (n=130)

	Group				
Location	0	1	2	3	4
	n=30	n=25	n=25	n=25	n=25
Edmonton	70.0	60.0	76.0	40.0	44.0
Elsewhere in Alberta	23.4	12.0	4.0	32.0	24.0
B.C.	0.0	12.0	0.0	4.0	16.0
Saskatchewan	0.0	0.0	0.0	0.0	4.0
Ontario	3.3	0.0	4.0	12.0	4.0
Maritimes/ NFLD	0.0	0.0	0.0	4.0	4.0
N.W.T.	0.0	4.0	0.0	0.0	0.0
U.S.A	0.0	8.0	8.0	0.0	4.0
England	0.0	0.0	0.0	8.0	0.0
Scotland	0.0	4.0	0.0	0.0	0.0
Australia	0.0	0.0	4.0	0.0	0.0
Holland	3.3	0.0	4.0	0.0	0.0

The present study was also compared to the Andreoff (1980) study for the residency variable. The residency data from the present study are similar except that the present study had a higher percentage of subjects from Edmonton (see Table 5).

Table 5: Percentage of Subjects by Residence Compared with the Andreoff (1980) Study

Location	Andrews (1982) n=130	Andreoff (1980)* n=404
Edmonton	58.5	27.5
Alberta	19.2	22.7
Ontario	4.6	11.0
Other Provinces and Territories	9.3	16.7
U.S.A	3.8	11.0
Europe/Other	4.6	9.0

*Andreoff's percentages do not add up to 100%.

Analyses were also done comparing the five groups in terms of how often the visitors frequented, firstly, the Provincial Museum of Alberta and secondly, museums in general. Findings for the variable, frequency of visits, are set out in Tables 6 and 7.

Distribution in terms of frequency of visits to the Provincial Museum varied between the five groups (see Table 6). Group 0 had the

lowest percentage of first time visitors, whereas Groups 3 and 4 had the highest percentage of first time visitors and few frequent visitors.

Table 6: Percentage of Subjects by Frequency of Visits to the Provincial Museum in Each of the Five Groups (n=130)

	Group					
Frequency	0	1	2	3	4	Total
	n=30	n=25	n=25	n=45	n=25	n=130
First Visit	24.1	28.0	32.0	44.0	48.0	34.6
Once a week	0.0	4.0	0.0	0.0	0.0	0.8
Once a month	17.2	0.0	0.0	8.0	4.0	6.2
Once in 2 mo.	0.0	16.0	12.0	4.0	4.0	6.9
Once in 6 mo.	10.4	4.0	28.0	20.0	16.0	15.4
Once a year	31.0	24.0	20.0	8.0	12.0	19.2
Once in 2 yrs	10.4	12.0	0.0	4.0	4.0	6.9
Once in 4 yrs	0.0	0.0	4.0	4.0	0.0	1.5
Not very often	6.9	12.0	4.0	8.0	12.0	8.5

Similarly, as shown in Table 7, frequency of visits to museums in general varies between the groups. However, no major differences appear in either table. No group stands out as having a disproportionate number of frequent or infrequent museum goers. Upon further analysis of the data using chi-square analysis it was found that the variable frequency of visits did not have a significant bearing on the cognitive response or affective response variables.

Table 7: Percentage of Subjects by Frequency of Visits to Other Museums in Each of the Five Groups (n=130)

Frequency	Group 0 n=30	1 n=25	2 n=25	3 n=25	4 n=25	Total n=130
Once a week	3.5	8.0	4.0	0.0	0.0	3.1
Once a month	0.0	4.0	0.0	12.0	4.0	3.8
Once in 2 mo.	10.3	4.0	12.0	4.0	8.0	7.7
Once in 6 mo.	10.3	28.0	28.0	8.0	20.0	18.5
Once a year	27.6	20.0	32.0	16.0	28.0	24.6
Once in 2 yrs	3.5	4.0	0.0	12.0	12.0	6.2
Once in 4 yrs	3.5	0.0	0.0	0.0	0.0	0.8
Not very often	31.0	20.0	16.0	40.0	16.0	24.6
Never	10.3	12.0	8.0	8.0	12.0	10.8

Finally, Table 8 presents the amount of time spent viewing the exhibit by the subjects in each of the five groups. The findings indicated that Groups 1, 2 and 3 were similar. Group 4, however, had a higher mean but also a greater range where one viewer viewed the exhibit for 140 seconds which in turn raised the mean. Taking, this point into account there appears to be no difference between the groups for the viewing time variable.

Table 8: Ranges, Means and Standard Deviations for Number of Seconds Viewers Spent Viewing the Exhibit (n=100)

Group (Exhibit)	Actual Range(Seconds)	Mean(seconds)	S.D.
1 (Flat Form)	8-73	29.6	14.87
2 (Torso Form)	10-78	32.5	15.09
3 (Abstract Mannequin)	10-49	28.2	11.56
4 (Period Mannequin)	10-140	38.8	23.99
Total	8-140	32.3	17.24

Note: In each of the four groups n = 25.

The average viewing time for the total sample was 32.3 seconds which is comparable to Linn's (1976) findings. Linn found after several examinations of exhibits at the Lawrence Hall of Science that the "average viewing time for traditional museum exhibits is forty seconds" (Linn, 1976, p. 294). It is not certain, however, exactly what type of exhibit Linn is referring to. Both studies were looking at traditional museum exhibits, but many other variables can affect the results such as size of the case and location. These latter points were not mentioned in Linn's article.

Cognitive Response

The first two ojectives of this study focused upon the subjects' cognitive responses to the exhibit as a whole. The subjects' cognitive

responses were analyzed based upon their scores on the objective test. Table 9 sets out the subjects' scores on the objective test for each of the five groups.

Table 9: Ranges, Means and Standard Deviations for Subjects' Scores on the Objective Test in Each of the Groups (n=130)

Group (Exhibit)	n	Range*	Mean	S.D.
0 (Did Not View Exhibit)	30	2-18	10.9	3.81
1 (Flat Form)	25	8-22	16.4	3.92
2 (Torso Form)	25	10-22	16.3	3.08
3 (Abstract Face)	25	10-20	16.8	2.70
4 (Period Mannequin)	25	10-22	15.8	3.13

*Possible range is 2 to 22.

It was found that Groups 1 to 4, those who viewed the exhibit, had similar scores with their means ranging from 15.8 to 16.8. Subjects who did not view the exhibit, Group 0, scored lower on the objective test than the other four groups with their mean score being 10.9.

The descriptive data set out in Table 9 was further analysed in terms of Objectives 1 and 2 of the study. Specifically, Objective 1 was to determine if a significant difference existed in the museum visitors' knowledge of women's early twentieth century bathing costumes between those who saw the exhibit and those who did not see the exhibit. To fulfill Objective 1 a null hypothesis was developed and one-way analysis of variance was used to test this hypothesis (see Table 10).

Table 10: Analysis of Variance for Cognitive Response as Measured by the Objective Test for Those Who Saw the Exhibit and for Those Who Did Not

Source	df	SS	MS	F	p
Between	4	694.01	173.50	15.14**	0.00
Within Groups	123	1409.86	11.46		
Total	127	2103.87			

**$p \leq .01$

The one-way analysis of variance indicated that a significant difference did exist between the museum visitors for the cognitive response variable. Null Hypothesis 1 that there is no significant difference in the museum visitors' knowledge of women's bathing costumes between those who saw the exhibit and those who did not see the exhibit was therefore rejected.

A Scheffé posteriori contrast test (Nie et al., 1975)(see Table 11) was performed to determine which groups were significantly different from one another in Hypothesis 1. The Scheffé test revealed that Group 0, those who did not view the exhibit, was the group that was significantly different from the other groups on the cognitive response variable.

Table 11: Scheffé Posteriori Contrast Test for Cognitive Response on the Objective Test Among the Five Groups of Subjects

		Group				
Mean	Group	0	4	2	1	3
10.9	GRP 0					
15.8	GRP 4	*				
16.3	GRP 2	*				
16.4	GRP 1	*				
16.8	GRP 3	*				

*Denotes pairs of groups significantly different at the p=0.50 level.

The results of the analysis for Objective 1 indicated that the casual museum visitor had a significantly lower score on the objective test than the viewers of the exhibit. These findings suggested that the casual visitor did not possess all of the information the researcher was seeking with respect to the topic of women's swimwear prior to coming to the museum. However, the mean score on the objective test was 10.9 out of a possible 22 points which indicates that this group either possessed some of the information or was able to guess at some of the correct answers. There is also an indication that there was some information transfer from the exhibit to those who viewed the exhibit. For the most part, this factor can be attributed to viewing the bathing costume exhibit directly. Since there was no other exhibit or other didactic or interpretive information relating to bathing costume history in the museum at the time of the exhibit, the only other explanation could be

that the subjects were able to confer with each other between interviews about the subject matter of the exhibit. The interviewer watched the subjects to be sure that subjects who had already been interviewed or had already viewed the exhibit were not approached again. However one can not totally rule out the fact that subjects could have conferred with one another as an explanation for some information transfer in the posttest groups but it is not believed to have been significant.

It is interesting to note that the information transfer found in the posttest groups in the present study is not consistent with several similar studies (Parson, 1965; Shettel, 1978; Eason and Linn, 1975) which found little information transfer with respect to the casual museum visitor. The findings are more consistent with Borun's finding (Borun, 1977) which showed an increase in posttest scores from pretest scores on a cognitive test for a museum exhibit. Borun (1977) has attributed the results of those studies which found little information transfer to their data collection techniques, stressing the importance of valid and reliable instruments.

The second objective of this study was to determine if a significant difference existed among the four groups of viewers with respect to their cognitive response to the exhibit. Mean scores on the objective test for each of the four posttest groups were in relatively close agreement (see Table 9). No apparent significant difference between the four groups was confirmed by a one-way analysis of variance (see Table 12) used to test Hypothesis 2. Null Hypothesis 2, that no significant difference exists among the four groups of viewers with

respect to their cognitive response to the exhibit was therefore not rejected.

Table 12: Analysis of Variance for Cognitive Response as Measured by the Objective Test between the Posttest Groups of Viewers

Source	df	SS	MS	F	p
Between	3	14.42	4.81	0.46	0.71
Within	94	988.39	10.51		
Total	97	1002.82			

The results of the study do indicate that there was information transfer for those that viewed the exhibit as seen with Objective 1. However, the researcher has concluded that the body forms did not make a difference to the cognitive response of the four groups. There are four possible explanations.

The first explanation is that the written information was so clearly stated that it was easy for all visitors that were interviewed to receive the message regardless of the body form used to display the costume. This clear statement of the message was based on the stating of the educational goals in the planning stages of the exhibit which were translated into measurable objectives. The objectives were in turn translated into the exhibit message that was repeatedly revised until it was a reflection of the objectives. The message was also stated in a simple question and answer format with titles and subtitles (see Appendix V).

A second explanation is that the body forms were not important to the communication of the message. There was a large archival photograph in the exhibit of three women in similar bathing costumes to the one worn by the body forms. Perhaps visitors tended to look at the photograph as much or more than the costume and the body forms and perhaps they could glean as much information from the exhibit regardless of type of body form used.

A third possible explanation is that parts of the objective test were too simple and could be guessed by anyone regardless of the type of body form used. This may be true in part as an item analysis of the objective test indicated that five out of the eleven questions were relatively easy in terms of difficulty. The overall reliability of the objective test was moderate with a coefficient of .54. However, the objective test was difficult enough to create a significant difference between the pretest and the posttest groups.

A final explanation for no significant difference between the posttest groups is that the written information presented in the exhibit was too simple and brief and that anyone over the age of 14 could recall the information regardless of the type of body form used. The written information consisted of titles and subtitles and short sentences totalling about 150 words (see Appendix V).

In light of the above explanations, the conclusion that the mannequins did not make a difference to the visitors' cognitive response to the exhibit in this study does not mean that this situation could never occur. This conclusion is not generalizable. Depending on the

message being presented in another situation, the type of body forms used, and the auxiliary display material, it is possible that the type of body form could make a difference to cognitive response.

Affective Reponse

The third objective of the study was to determine if a significant difference existed between the four groups of viewers with respect to their affective response to the body forms used to display the bathing costume. Objective 3 was looked at in three stages. First, affective response was analysed on the basis of the total scores on the Andrews Semantic Differential. Affective response then was analysed based on the scores on each of the three factors (Evaluative, Activity and Potency). Lastly, affective response was analyzed on the basis of the scores on each of the scales on the Andrews Semantic Differential.

In comparing the total score on the Andrews Semantic Differential (see Table 13) it was found that Groups 1 and 3 had higher mean scores than those in Groups 2 and 4, with Group 1 finding the flat form the least favourable and Group 4 finding the period mannequin the most favourable. It was also found that those groups with the highest means (a high score was more unfavourable than the low score) had the lowest ranges, which would suggest more consistency within the groups that disliked the body forms than those that liked the body forms they viewed. Conversely, the groups with the lowest means had the highest

range which would mean that there was less consistency within the groups viewing the torso form and the period mannequin.

Table 13: Ranges, Means and Standard Deviations for the Total Score on the Andrews Semantic Diffential for Viewers in Each of the Four Groups (n=95)

Group (Exhibit)	n*	Actual Range**	Mean	S.D.
1 (Flat form)	23	30-90	60.4	14.83
2 (Torso form)	24	19-93	52.4	16.49
3 (Abstract face)	25	39-81	57.3	12.94
4 (Period mannequin)	23	25-93	44.3	15.50

*n for each of the groups is equal to the number of subjects who completed all 15 scales on the Andrews Semantic Differential for that group.

**The possible range for total score on the Andrews Semantic Differential was 15 (favourable) to 105 (unfavourable).

To test Null Hypothesis 3 and to determine if there was a significant difference between the groups, a one-way analysis of variance was conducted based on the total score for the Andrews Semantic Differential (see Table 14). It was found that a significant difference did exist between the four groups of viewers based on the total score for the semantic differential.

Table 14: Analysis of Variance for Affective Response as Measured by the Andrews Semantic Differential between the Posttest Groups of Viewers

Source	df	SS	MS	F	p
Between	3	3462.09	1154.03	5.15**	0.003
Within Groups	91	20401.11	224.19		
Total	94	23863.19			

**$p \leq .01$

Null Hypothesis 3 stated that no significant difference exists among the four groups of viewers with respect to their affective response to the different body forms used to display the costume. Based on the findings set out in Table 14, Null Hypothesis 3 was rejected.

A Scheffé posteriori contrast test (see Table 15) was performed to determine which groups were significantly different from one another. The results of the post hoc test indicated that scores on the Andrews Semantic Differential for Group 4 (period mannequin) were significantly different from the other three groups. It was also found that scores on the semantic differential for Group 2 were significantly different from the scores for Group 1.

Table 15: Scheffé Posteriori Contrast Test for Affective Response as Measured by the Andrews Semantic Differential between the Posttest Groups of Viewers

		Group			
Mean	Group	4	2	3	1
44.26	GRP 4				
52.38	GRP 2	*			
57.32	GRP 3	*			
60.43	GRP 1	*	*		

*Denotes pairs of groups significantly different at the p=0.50 level.

The results indicated that, overall, the period mannequin with hair, facial features, arms and legs was found to be the most favourable body form in terms of affective response. The flat two-dimensional form, on the other hand was found to be the least favourable in terms of affective response.

These findings do not merely indicate that the more realistic the mannequin, the more it was liked. The torso form which was three dimensional but did not have a head, hair or arms was found to be second most favourable in terms of affective response. The torso form was also considered more favourable than the abstract mannequin. The abstract mannequin which was three dimensional in form, possessed a head and hair but no facial features were included. The abstract mannequin had legs and arms with hands, but the hands were abstracted into the form of mitts. From the researcher's point of view, the headless torso form was

not more realistic or more human-like than the abstract mannequin. However, these results may be attributed in part to the fact that the torso form and other similiar mannequins are more commonly used in museum exhibits than forms such as the abstract mannequin. The torso form may just be more familiar to the subjects and thus maybe more favourable.

Stage 2 for the analysis of Objective 3 looked at affective response based on scores on each of the three factors (Evaluative, Activity and Potency). It should be noted at this point that the three factors used in the analyses for affective response were determined after a factor analysis of the affective response data was performed. Upon analysing correlation coefficents for each of the 15 variables on the Andrews Semantic Differential, analysing an initial unrotated factor matrix and looking at plots of the three rotated factors it was determined that there was one very strong factor and two weaker factors. A further analysis was then performed using three factors. The communalities and factor loadings of each scale on the Andrews Semantic Differential as well as the eigenvalues and the percent of the total variance contributed by each of the three factors are presented in Table 16.

Table 16: Factor Loadings and Communalities for Each Scale and Eigenvalues and Percent Total Variance for Each Factor on the Andrews Semantic Differential.

Scale	Communality	Factor 1	Factor 2	Factor 3
Attractive Unattractive	0.601	0.594	0.490	0.086
Interesting Boring	0.457	0.774	0.266	0.272
Informative Uninformative	0.659	0.648	0.274	0.230
Explicit Ambiguous	0.548	0.676	0.051	0.035
Eyecatching Non-eyecatching	0.744	0.554	0.254	0.126
Pleasant Unpleasant	0.364	0.537	0.526	0.017
Sharp Dull	0.486	0.570	0.591	0.091
Dead Alive	0.458	0.332	0.568	0.153
Energetic Non-energetic	0.566	0.077	0.777	0.220
Ineffective Effective	0.682	0.296	0.522	-0.055
Passive Active	0.462	0.220	0.602	0.275
Static Dynamic	0.387	0.384	0.566	0.165
Strong Weak	0.649	0.298	0.316	0.519
Overpowering Subtle	0.241	-0.095	0.002	-0.800
Silent Loud	0.495	0.042	-0.337	-0.354
Eigenvalue		5.976	0.969	0.854
%Total Variance		76.6	12.4	10.9

The eigenvalues for each of the three factors (see Table 16) confirmed the fact that factor 1 was very strong with a value of 5.976, whereas, factors 2 and 3 did not quite equal 1.00. Factor 2 had an eigenvalue of 0.969 and factor 3 had an eigenvalue of 0.854. Factor 1 accounted for most of the variance at 76.6 percent of the total. Despite these findings the researcher decided to investigate further Objective 3 and in turn Hypothesis 3 in terms of the three factor decision. There are several reasons that lead to this decision.

Firstly, the initial analysis of the data in terms of the initial factor matrix and the plots of the rotated factors indicated that there were either three factors or else one very strong factor. Secondly, the eigenvalues for factors 2 and 3, although not quite up to the usual accepted minimum value of 1.00, were very close to 1.00 and they were very close in value to one another. Thirdly, upon further analysis of the results for the three factor solution it was found that some variables on the semantic differential clearly clustered with factors 2 and 3 (e.g., overpowering and strong, energetic and passive) and did not cluster with factor 1 to any significant level. Lastly, the Andrews Semantic Differential was based on three factors and these three factors also related to the objectives of the exhibit.

It should be noted that the Evaluative factor is usually found to be the strongest factor and often overrides the other factors (Nunnally, 1978, p. 609). In the present study the Evaluative factor was also found to be the strongest. Nunnally explains that "the evaluative factor is prominent because nearly all adjectives imply negative and

positive characteristics (Nunnally, 1978, p. 609).

The results presented in Table 16 also indicated which variables clustered with which factors. Not all of the findings are consistent with what was originally thought to cluster with the three factors when developing the Andrews Semantic Differential. Factor 1, termed the Evaluative factor, included the scales "attractive - unattractive", "informative - uninformative" and "explicit - ambiguous" from the original list, as well as "eyecatching - non-eyecatching" and "interesting - boring" which were originally thought to cluster with the Potency factor. The scale "pleasant - unpleasant", which was originally thought to fall into the Evaluative factor, was equally divided between the Evaluative factor and the Activity factor. Therefore, it was decided not to use the scale "pleasant - unpleasant" in the one-way analysis of variance for any factor.

Factor 2, the Activity factor, included the scales "dead - alive", "energetic - non-energetic", "passive - active" and "static - dynamic" from the original list, as well as "ineffective - effective" which was originally thought to cluster with the Evaluative factor. The scale "sharp - dull", originally thought to fall into the Activity factor, was equally divided between the Evaluative factor and the Activity factor. Therefore it was decided not to use this scale in the one-way analysis of variance for any factor.

Factor 3, the Potency factor, included the scales "strong - weak" and "overpowering - subtle" from the original list. The scale "silent - loud" did not cluster with any factor and accordingly it was not used in

the one-way analysis of variance for any factor.

Basic descriptive data were obtained and a one-way analysis of variance was performed for each of the three factors. The results of the descriptive analysis for all three factors are presented in Table 17.

Table 17: Means and Standard Deviations for Scores on the Evaluative, Activity and Potency Factors of the Andrews Semantic Differential for Viewers in Each of the Four Groups

Factor	Mean Standard Deviation	Group 1 n=23	2 n=25	3 n=24	4 n=24
Evaluative scales = attractive, informative, explicit, eyecatching, interesting)	M	18.5	13.4	18.3	12.5
	SD	7.80	7.38	8.15	7.00
Activity (scales=passive, static, energetic dead, ineffective)	M	24.3	22.3	21.2	16.5
	SD	6.48	7.14	5.74	6.44
Potency (scales=strong, overpowering)	M	7.6	6.8	7.2*	7.0
	SD	2.14	1.93	1.39	1.51

*n=25

In comparing the scores of the Evaluative factor for each of the four groups it was found that Group 1, those who viewed the flat form had the highest mean score and Group 4, those who viewed the period

mannequin, had the lowest mean score. These results are very similar to those found for total score on the Andrews Semantic Differential.

To further investigate Objective 3 and the third hypothesis a one-way analysis of variance was conducted based on the total score for the Evaluative factor in each of the four groups (see Table 18). It was found that a significant difference did exist among the four groups of viewers on the Evaluative factor for the affective response variable. With respect to the Evaluative factor for the variable affective response, Null Hypothesis 3 was rejected.

Table 18: Analysis of Variance for Scores on the Evaluative Factor of the Andrews Semantic Differential between the Posttest Groups

Source	df	SS	MS	F	p
Between	3	727.23	242.41	4.19**	0.01
Within Groups	92	5322.75	57.85		
Total	95	6049.98			

**$p \leq .01$

A Scheffé posteriori contrast test was performed to determine which groups were significantly different from one another for the Evaluative factor (see Table 19). Groups 4 and 2 were found to be significantly different from Groups 3 and 1. Thus, the period mannequin and the headless torso form were not found to be significantly different from each other.

Table 19: Scheffé Posteriori Contrast Test for Scores on the Evaluative Factor of the Andrews Semantic Differential between the Posttest Groups

Mean	Group	Group 4	2	3	1
12.5	GRP 4				
13.4	GRP 2				
18.3	GRP 3	*	*		
18.5	GRP 1	*	*		

*Denotes pairs of groups significantly different at the p=0.50 level.

In terms of explaining these results for the Evaluative factor, a similar discussion to that presented for the total score on the Andrews Semantic Differential would also apply here, the major difference being that Groups 4 and 2 were not significantly different from each other. This means that for scales such as "attractive - unattractive" and "interesting - boring", the torso form and the period mannequin were rated similarly in terms of favourability.

The mean scores on the Activity factor for the four groups of viewers are also set out in Table 17. The results in this case indicated that the period mannequin was again rated the most favourable with the other three groups providing less favourable mean scores. It is also interesting to note that the mean score for each of the groups on the Activity factor was consistently higher than those obtained on the Evaluative factor despite both factors having the same number of scales in each. This would indicate that, overall, the viewers found

all of the mannequins to be more closely related to the unfavourable end of the scales for the Activity factor than for the Evaluative factor.

To further investigate Objective 3 and Hypothesis 3 a one-way analysis of variance was performed on the scores for the Activity factor (see Table 20). The results indicated that a significant difference did exist between the groups for the Activity factor. With respect to the Activity factor for the affective response variable, Null Hyposthesis 3 was rejected.

Table 20: Analysis of Variance for Scores on the Activity Factor of the Andrews Semantic Differential between the Posttest Groups

Source	df	SS	MS	F	p
Between	3	763.36	254.45	6.10**	0.00
Within Groups	92	3840.58	41.75		
Total	95	4603.94			

**$p \leq .01$

A Scheffé posteriori contrast test was performed to determine which groups were significantly different from one another on the Activity factor (see Table 21). Group 4, those who viewed the period mannequin had significantly different scores from the other three groups. The abstract mannequin was also found to be significantly different from the flat form.

Table 21: Scheffé Posteriori Contrast Test for Scores on the Activity Factor of the Andrews Semantic Differential between the Posttest Groups

		Group			
Mean	Group	4	3	2	1
16.5	GRP 4				
21.2	GRP 3	*			
22.3	GRP 2	*			
24.3	GRP 1	*	*		

*Denotes pairs of groups significantly different at the p=0.50 level.

The commercial period mannequin was still favoured the most for the Activity factor. This can be attributed to the fact that the period mannequin had an active pose, was three dimensional with arms, legs and hands. Although the same active pose was attempted for the flat form, this pose was difficult to achieve when the form had non-flexible two-dimensional legs, no arms and no head.

The commercial abstract mannequin was found to be the third most favourable form on the Evaluative factor and the second most favourable on the Activity factor. The abstract mannequin did have a more active pose than either the headless torso form or the flat form. In fact, the abstract mannequin was in exactly the same pose and had the same body as the period mannequin with the only major difference being an abstract face and hands on the former. Since these two forms were so similar the results seem to indicate that the realistic face and abstract face made

the difference. It seems that the realistic face was considered more favourable on the Activity factor.

The abstract mannequin was also found to be significantly different from the torso form. Again, this is attributable to the fact that it is difficult to put a headless and armless form in an active pose such as was done with the full period and abstract mannequins.

In terms of the bathing costume exhibit, the Activity factor was quite important. The active pose set the mood for the bathing costume and it also helped to illustrate the cumbersome nature of the suit. In light of the analysis, it seems that a full mannequin with moveable joints and realistic facial features was the most favourable.

The Potency factor was also analysed for Stage 2 of the affective response discussion. The means and standard deviations are set out in Table 17. The results indicated that there was little difference between the means for the four groups.

A one-way analysis of variance was performed for the Potency factor (see Table 22). The results indicated that there was no significant difference among the four groups on the Potency factor for the affective response variable. In terms of the Potency factor, Null Hypothesis 3 was not rejected. This result may be attributable to the fact that the visitors may not have found the body forms to possess any strength characteristics or as Nunnally pointed out, perhaps the Evaluative factor just overrode the Potency factor (Nunnally, 1978).

Table 22: Analysis of Variance for Scores on the Potency Factor of the Andrews Semantic Differential between the Posttest Groups

Source	df	SS	MS	F	p
Between Groups	3	8.13	2.71	0.86	0.46
Within Groups	93	291.89	3.14		
Total	96	300.02			

Finally, Stage 3 for the analysis of Objective 3 looked at the affective response variable based on scores on each of the scales on the Andrews Semantic Differential. For ease of analysis and for consistency the data for each of the scales have been set out in terms of those scales relating to the Evaluative factor, the Activity factor, the Potency factor and those factors not clustering with any factor.

The means and standard deviations for scores on each scale of the Evaluative factor in each of the four groups are presented in Table 23. To further test Objective 3 and Hypothesis 3 one-way analyses of variance were performed on the scores for each of the scales in the Evaluative factor (see Table 24). It was found that the scale "attractive - unattractive" was significant at the .01 level, the scales "explicit - ambiguous" and "eyecatching - non-eyecatching" were significant at the .05 level and the scales "informative - uninformative" and "interesting - boring" were not significant in terms of the alpha level set for this study. Therefore, in terms of each scale on the Evaluative factor for the affective response variable, Hypothesis 3 was rejected for the scales "attractive - unattractive",

"explicit - ambiguous" and "eyecatching - non-eyecatching" and not rejected for the scales "informative - uninformative" and "interesting - boring".

Table 23: Means and Standard Deviations for Scores on Each Scale of the Evaluative Factor of the Andrews Semantic Differential for Viewers in Each of the Four Groups

Scale	Mean / Standard Deviation	GROUP 1 n=25	2 n=24	3 n=25	4 n=23
Attractive	M	4.7	3.8	4.7	2.4
Unattractive	SD	1.57	2.01	1.89	1.56
Informative	M	3.2	2.5	3.2	2.6
Uninformative	SD	2.42	2.13	2.14	1.88
Explicit	M	3.6*	2.2	3.2	3.0
Ambiguous	SD	2.04	1.01	1.85	1.80
Eyecatching	M	3.4	2.6	4.0	2.2
Non-eyecatching	SD	2.3	1.95	2.82	1.70
Interesting	M	3.4	2.3	3.2	2.4
Boring	SD	2.33	1.85	1.94	1.56

*n=24

Table 24: Analysis of Variance for Scores on Each Scale of the Evaluative Factor on the Andrews Semantic Differential

Scale	Source		SS	MS	F	p
Attractive Unattractive	Between GRPS	3	81.28	27.09	8.65**	0.00
	Within GRPS	93	291.47	3.13		
	Total	96	372.74			
Informative Uninformative	Between GRPS	3	9.53	3.18	0.69	0.56
	Within GRPS	93	431.44	4.64		
	Total	96	440.97			
Explicit Ambiguous	Between GRPS	3	27.07	9.02	3.05*	0.03
	Within GRPS	92	271.91	2.96		
	Total	95	298.98			
Eyecatching Non-eyecatching	Between GRPS	3	50.40	16.80	3.92*	0.01
	Within GRPS	93	398.10	4.28		
	Total	96	448.49			
Interesting Boring	Between GRPS	3	26.14	8.71	2.30	0.08
	Within GRPS	93	351.88	3.78		
	Total	96	378.02			

*$p \leq .05$
**$p \leq .01$

Scheffé posteriori contrast tests were performed for the scores on each of the significant scales for the Evaluative factor (see Table 25). The results indicated that for the scale "attractive - unattractive" Group 4 was significantly different from the other three groups. Group 1 was also significantly different from Groups 3 and 2.

Based on the results of the Scheffé posteriori constrast tests, the period mannequin was considered the most favourable for the affective response variable on the scale "attractive - unattractive". The headless torso form was also found to be more favourable than either the abstract mannequin or the flat form. It is interesting to note that the abstract commercial mannequin was not considered very attractive although it was almost identical to the period mannequin except for the blank face and abstract hands.

The Scheffé posteriori contrast test (see Table 25) performed on the scores for the scale "explicit - ambiguous" revealed that Group 2 (those who viewed the headless torso form) were significantly different from the other 3 groups for the affective response variable. Group 2 also had the lowest mean score or the most favourable mean score for the affective response variable. This is an unexpected result as the torso form had no head or arms or hair to assist in the communication of the exhibit message. If any form was considered to be explicit it was thought that it would be the period mannequin.

Table 25: Scheffé Posteriori Contrast Test for Scores on Each Scale of the Evaluative Factor on the Andrews Semantic Differential

Scale	Mean	Group				
Attractive			4	2	3	1
Unattractive	2.4	GRP 4				
	3.8	GRP 2	*			
	4.7	GRP 3	*	*		
	4.7	GRP 1	*	*		
Explicit			2	4	3	1
Ambiguous	2.2	GRP 2				
	3.0	GRP 4	*			
	3.3	GRP 3	*			
	3.6	GRP 1	*			
Eyecatching			4	2	1	3
Non-eyecatching	2.2	GRP 4				
	2.6	GRP 2				
	3.4	GRP 1	*			
	4.0	GRP 3	*	*		

*Denotes pairs of groups significantly different at the p=0.50 level.

The results for the scale "explicit - ambiguous" may be attributable to the torso form presenting the essentials for the swimwear exhibit, the bathing suit in 3-dimensional form, not clouded with the facial features of a full mannequin. This point is consistent with the belief of Harris (1977) that a realistic face on a full mannequin may detract from the message being presented.

It was also interesting to note that the scale "explicit - ambiguous" was found to be significant after a one-way analysis of variance was performed but that the scale "informative - uninformative" was not significant at the .05 level. The results found for the scale

"informative - uninformative" are consistent with the findings for Objective 2 where there was no difference between the groups on the cognitive response variable. However, the researcher initially thought that both the scales "explicit - ambiguous" and "informative - uninformative" were related to the cognitive variable.

A Scheffé posteriori contrast test, performed on the scores for the scale "eyecatching - non-eyecatching", indicated that Group 4 was significantly different from Groups 1 and 3 for the affective response variable. Group 2 was also found to be significantly different from Group 3.

The scale "eyecatching - non-eyecatching" is an important variable related to museum exhibits. It is important to catch the viewers' attention first if one wants them to receive the message (Brown, 1979; Borun, 1977; Screven, 1974; Shettel, 1973). The results for the present study indicated that the viewers found the period mannequin to be the most favourable in terms of the scale "eyecatching - non-eyecatching". This result is understandable when one considers that the period mannequin was also found to be the most attractive and that it was in an active pose. However, it is difficult to see why the headless torso form was also found to be favourable on the scale "eyecatching - non-eyecatching". In the author's view the abstract mannequin with its blank face and abstract hands was the one form that was initially

thought to rate as most favourable on the scale "eyecatching - non-eyecatching" because it was so different. It is also interesting to note that the scale "eyecatching - non-eyecatching" was found to be significant and the scale "interesting - uninteresting" was not found to be significant for the variable affective response.

The means and standard deviations for scores on each scale for the Activity factor are presented in Table 26. To further explore Objective 3 and Hypothesis 3 one-way analyses of variance were performed on the scores for each of the scales on the Activity factor (see Table 27). It was found that the scales "active - passive" and "energetic - non-energetic" were significant at the .01 level, the scale "dead - alive" was significant at the .05 level and the scales "dynamic - static" and "effective - ineffective" were not significant in terms of the alpha level set for the study. Therefore, in terms of each scale on the Activity factor for the affective response variable, Hypothesis 3 was rejected for the scales "active - passive", "energetic - non-energetic" and "dead - alive" and not rejected for the scales "dynamic - static" and "effective - ineffective".

Table 26: Means and Standard Deviations for Scores on Each Scale of the Activity Factor of the Andrews Semantic Differential for Viewers in Each of the Four Groups

Scale	MEAN Standard Deviation	GROUP 1 n=25	2 n=24	3 n=25	4 n=23
Active	M	5.4	4.8	4.0	3.3
Passive	SD	1.89	2.06	1.67	1.98
Dynamic	M	4.9	4.5	4.8	3.8
Static	SD	1.69	1.53	1.63	1.56
Energetic	M	5.5	4.8	4.2	3.6
Non-energetic	SD	1.78	1.74	1.86	1.67
Dead	M	4.9*	4.8	5.1	3.5
Alive	SD	1.82	1.74	1.68	1.81
Effective	M	3.8	3.5	3.2	2.4
Ineffective	SD	2.22	2.17	1.91	1.56

*n=24

Table 27: Analysis of Variance for Scores on Each Scale of the Activity Factor on the Andrews Semantic Differential

Scale	Source	df	SS	MS	F	p
Active Passive	Between GRPS	3	62.15	20.72	5.73**	0.00
	Within GRPS	93	336.49	3.62		
	Total	96	398.64			
Dynamic Static	Between GRPS	3	16.34	5.45	2.11	0.10
	Within GRPS	93	239.90	2.58		
	Total	96	256.25			
Energetic Non-energetic	Between GRPS	3	47.71	15.90	5.09**	0.00
	Within GRPS	93	290.41	3.12		
	Total	96	338.12			
Dead Alive	Between GRPS	3	35.79	11.93	3.77**	0.01
	Within GRPS	92	291.37	3.17		
	Total	95	327.16			
Effective Ineffective	Between GRPS	3	26.18	8.73	2.21	0.09
	Within GRPS	93	367.10	3.95		
	Total	96	393.28			

*$p \leq .05$
**$p \leq .01$

Scheffé posteriori contrast tests were performed for the scores on each of the significant scales for the Activity factor (see Table 28). The results indicated that for the scale "active - passive" Group 4 and Group 3 were significantly different from Groups 2 and 1 for the affective response variable. These findings are similar to the findings for the Activity factor, with the major difference being that Groups 4 and 3 were not found to be significantly different from one another.

This can be attributable to the fact that when the single scale "active - passive" is looked at rather than the Activity factor where some scales may not apply to a specific form both the period mannequin and the abstract mannequin were almost indentical. Both had the same active pose.

Table 28: Scheffé Posteriori Contrast Test for Scores on Each Scale of the Activity Factor on the Andrews Semantic Differential

Scale	Mean	Group				
Active			4	3	2	1
Passive	3.3	GRP 4				
	4.0	GRP 3				
	4.8	GRP 2	*	*		
	5.4	GRP 1	*	*		
Energetic			4	3	2	1
Non-energetic	3.6	GRP 4				
	4.2	GRP 3				
	4.8	GRP 2	*			
	5.5	GRP 1	*	*		
Dead			4	2	1	3
Alive	3.5	GRP 4				
	4.8	GRP 2	*			
	4.9	GRP 1	*			
	5.1	GRP 3	*			

* Denotes pairs of groups significantly different at the p=0.50 level.

A similar pattern also occurred for the scale "energetic - non-energetic" where Groups 4 and 3 were significantly different from Group 1 and Group 4 was also significantly different from Group 2. However, Groups 4 and 3 were not significantly different from one

another. Like the scale "active - passive" the period mannequin and the abstract mannequin also seem to be the most favourable on the scale "energetic - non-energetic" for similar reasons.

When the results for the scale "dead - alive" were looked at it was found that the abstract commercial mannequin was the least favourable, even more so than the two headless forms. Despite the fact that the abstract mannequin was considered favourable for the scales "active - passive" and "energetic - non-energetic" it was also found to be not favourable or tending towards the "dead" end of the scale "dead - alive". This is an interesting finding as the period mannequin that was identical to the abstract mannequin except for the face and hands was considered very favourable for all of the significant activity scales. These results indicate that the viewers considered the blank face as being unfavourable on the scale "dead - alive" and that a headless form was better than a blank face in terms of the scale "dead - alive" for the affective response variable.

The means and standard deviations for scores on each scale for the Potency factor are presented in Table 29. To further test Objective 3 and Hypothesis 3 one-way analyses were performed on the scores for each of the scales on the Potency factor (see Table 30). Neither the scale "strong - weak" nor the scale "subtle - overpowering" was found to be significant at the .05 level. Therefore, in terms of each scale on the Potency factor for the affective response variable, Null Hypothesis 3 was not rejected.

Table 29: Means and Standard Deviations for Scores on Each Scale of the Potency Factor of the Andrews Semantic Differential for Viewers in Each of the Four Groups

	MEAN	GROUP			
Scale	Standard Deviation	1 n=25	2 n=24	3 n=25	4 n=23
Strong Weak	M	4.0	3.3	3.8	3.5
	SD	2.00	1.57	1.55	1.50
Subtle Overpowering	M	3.6	3.5	3.4	3.5
	SD	1.68	1.32	1.61	1.50

Table 30: Analysis of Variance for Scores on Each Scale of the Potency Factor on the Andrews Semantic Differential

Scale	Source	df	SS	MS	F	p
Strong Weak	Between Groups	3	7.72	2.57	0.92	0.43
	Within Groups	93	260.06	2.80		
	Total	96	267.77			
Subtle Overpowering	Between Groups	3	0.53	0.18	0.08	0.97
	Within Groups	93	219.70	2.36		
	Total	96	220.23			

The means and standard deviations for scores on each scale not clustering with any of the three factors are presented in Table 31. Although these scales were not used in the testing of Hypothesis 3, one-way analyses of variance were performed on each of these scales for interest (see Table 32). It was found that only the scale "sharp - dull" was significant at the alpha level set for this study.

Table 31: Means and Standard Deviations for Scores on Each Scale Not Clustering with One of the Three Factors on the Andrews Semantic Differential

Scale	Mean Standard Deviation	Group 1 n=25	2 n=24	3 n=25	4 n=23
Pleasant	M	3.6	3.1	3.0	2.5
Unpleasant	SD	1.90	1.69	1.23	1.53
Sharp	M	4.5	3.7	4.2	2.8
Dull	SD	1.81	1.85	1.63	1.52
Silent	M	2.9	3.0	3.4	2.9
Loud	SD	1.88	1.65	1.71	1.41

Table 32: Analysis of Variance for Scores On Each Scale of the Andrews Semantic Differential That Did Not Cluster with any of the Three Factors

Scale	Source	df	SS	MS	F	p
Pleasant Unpleasant	Between GRPS	3	14.10	4.70	1.82	0.15
	Within GRPS	93	239.73	2.58		
	Total	96	253.83			
Sharp Dull	Between GRPS	3	38.16	12.12	4.35**	0.01
	Within GRPS	93	271.86	2.92		
	Total	96	310.02			
Silent Loud	Between GRPS	3	3.56	1.19	0.42	0.74
	Within GRPS	93	261.18	2.81		
	Total	96	264.74			

**$p \leq .01$

A Scheffé posteriori contrast test was performed for the scores on the scale "sharp - dull" (see Table 33). The results indicated that Group 4 was again significantly different from the other groups. Group 2 was also significantly different from Group 1.

Table 33: Scheffé Posteriori Contrast Test for Each Scale Not Clustering with One of the Three Factors on the Andrews Semantic Differential

Scale	Mean	Group				
Sharp			4	2	3	1
Dull	2.8	GRP 4				
	3.7	GRP 2	*			
	4.2	GRP 3	*			
	4.5	GRP 1	*	*		

*Denotes pairs of groups significantly different at the p=0.50 level.

The results of the analysis for the scale "sharp - dull" are interesting as this scale was expected to be difficult for the viewers to relate to in terms of body forms. The results in this case did indicate that there was consistency between the scale "sharp - dull" and the total score for the Andrews Semantic Differential in terms of which body form was favoured most. The most favourable body form for the scale "sharp-dull" was found to be the period mannequin with the headless torso mannequin being the second most favourable.

Relationship Between Cognitive and Affective Reponse

The last objective of this study was to investigate the relationship between the viewers' cognitive responses to the exhibit and the viewers' affective responses to the body forms used to display the costume. To fulfill Objective 4, Null Hypothesis 4 was developed. Null Hypothesis 4 stated that no significant relationship exists between the viewers' cognitive responses to the exhibit and the viewers' affective responses to the body forms used to display the costume. Pearson's correlation coefficent was used to test Null Hypothesis 4 for the total sample of viewers and for each of the four posttest groups (see Table 34).

Table 34: Correlation between Scores on the Objective Test (Cognitive Response) and Scores on the Andrews Semantic Differential (Affective Response) for the Groups of Viewers Viewing the Exhibit

	Affective Response				
	All Groups	Group 1	Group 2	Group 3	Group 4
Cognitive Response	r=0.144	r=-0.324	r=0.011	r=-0.476*	r=0.0151

*$p \leq .05$

It was found that there was a significant negative correlation between the viewers' cognitive responses to the exhibit and the viewers' affective responses to the exhibit and the viewers' affective responses

to the body form for the group of viewers who viewed the commercial abstract mannequin (r=-0.476). There was no significant correlation between cognitive response and affective response for the total sample of viewers nor for any other individual group of viewers. Null Hypothesis 4 was therefore only be rejected for Group 3 and was not rejected for the total sample of viewers, Group 1, Group 2 or Group 4.

The results for Hypothesis 4 in terms of the total sample of viewers were not surprising when the findings for Hypothesis 2 were considered. With respect to Hypothesis 2 it was found that there was no difference between the four groups on cognitive response. The body forms made no difference to the viewers' cognitive responses and viewing the body forms in favourable or unfavourable terms does not relate to cognitive responses in the present study. This conclusion may be attributable to the fact that the body forms were not important to the reception of the message.

However, it is interesting that there was a negative correlation between the affective and cognitive response for those who viewed the abstract mannequin. The correlation has a negative sign because to score high on the cognitive test the numerical score was also high; however, to obtain a favourable score on the affective test the numerical score was low, thus a negative correlation. These results indicated, that as the score on the cognitive test increased, the abstract mannequin was considered more favourable. This may be attributed to the fact that those who scored high on the cognitive test also liked the abstract mannequin. However, since the correlation for

the total sample of viewers and the other groups was not significant, the results for Group 3 do not make a difference in terms of the question that was being addressed.

CHAPTER 5

SUMMARY AND RECOMMENDATIONS

The purpose of this study was to design and develop a costume exhibit which incorporated a systematic means of measuring subjects' cognitive and affective responses to four types of costume mounts. The study looked at what relationships may exist between the subjects' affective responses to the body form used to display the costume and the subjects' cognitive responses to the exhibit. The body forms that were used included a headless two-dimensional form, a headless three dimensional torso form, an abstract mannequin with abstract face and hands and a period mannequin with facial features.

The sample, accidental/purposive in nature, consisted of 51 males and 79 females who visited the Provincial Museum of Alberta during the month of August, 1982 and the first weekend of September, 1982. A pretest group of visitors who did not view the exhibit consisted of 30 subjects while a posttest group of viewers who did view the exhibit consisted of 100 subjects with 25 subjects viewing each of the four different body forms. A pretest and a posttest structured interview of similar format and content were developed and administered. The instruments for the interviews included a demographic questionnaire and an objective test. The posttest interview also included the Andrews

Semantic Differential.

The methodology for this study was adapted from essentially three related areas of research including basic communication theory, a goal-referenced approach to evaluation and systematic testing of exhibit variables. Since no empirical data existed with respect to visitor response to costume mounts used in exhibits, it was not possible in most cases in this study to analyse the data in terms of other specifically related studies. However, where it was applicable the data for the present study were viewed in terms of related literature and in terms of related exhibit evaluation studies not specifically studying the 'body form' variable.

When a one-way analysis of variance and ultimately a Scheffé posteriori contrast test were performed on the data from the objective test, the findings indicated that the scores for those who did not view the exhibit were significantly lower than the other four groups who did view the exhibit. These results indicated that there was information transfer between the exhibit and its viewers. Borun (1977) found similar results, but other studies such as Parsons (1965), Shettel (1968), and Eason and Linn (1975) found little information transfer when testing the casual museum visitor. The researcher for the present study tends to agree with Borun's suggestion that the finding of lack of information transfer in the other studies may have been due to the data collection techniques used. It is extremely important to have valid and reliable instruments when conducting any type of research.

It was also found in the present study that the use of different

costume mounts had no appreciable effect on what the viewers learned from the exhibit. The viewers' cognitive responses were consistent throughout each of the posttest groups. Bloom (1956) suggested that there are various relations between the cognitive and affective domains in learning environments. He said that the "particular relations in any situation are determined by the learning experiences the students have had (Bloom, 1956, p. 56). Bloom (1977) also stated that in one situation cognitive achievement may be high and affective feelings may be low and vice versa for another situation (p. 56). In terms of the present study the findings did not indicate that costume mounts will never have an effect on cognitive response, but that in this particular case that was the finding.

While the viewers showed no difference in cognitive response to the different body forms, the viewers clearly reacted differently on the affective level. The results of the study indicated that the period mannequin with a head, facial features, hair, arms and legs was considered to be the most favourable body form overall. The period mannequin was also found to be the most favourable body form on several scales of the Andrews Semantic Differential. Included were the scales "attractive - unattractive", "eyecatching - non-eyecatching", "energetic - non-energetic", "alive - dead" and "sharp - dull". There were no scales in which the period mannequin was reacted to in a negative manner, although for the scale "active - passive" the abstract mannequin was found to be as favourable as the period mannequin.

The three-dimensional torso form without a head was found to be

the second most favourable body form overall and the second most favourable form for the scales "attractive - unattractive", "eyecatching - non-eyecatching", "alive - dead" and "sharp - dull". The torso form was also found to be the most favourable body form in terms of the scale "explicit - ambiguous". The results for the scale "explicit - ambiguous" may be attributable to the fact that the headless three dimensional form did present the essentials of the swimwear exhibit, the bathing suit, in its proper shape without distracting the viewer with facial features (Harris, 1977).

However, there were two scales, "active - passive" and "energetic - non-energetic", where the torso form was found to be the second least favourable body form, even less favourable than the abstract mannequin. These results indicated that in terms of activity variables the torso form was not a good choice in this particular exhibit situation.

The abstract mannequin, on the other hand, did not fare as well in this particular study as the torso form and the period mannequin did. The abstract mannequin was found to be the least favourable in terms of the scale "eyecatching - non-eyecatching" and the scale "alive - dead". The results found for the scale "eyecatching - non-eyecatching" are important. Many authors have pointed out that the exhibit has a limited amount of time to convey its message to the viewer and in this time it must attempt to attract and hold the viewer's attention as well as convey the message (Brown, 1979; Borun, 1977; Sharpe, 1976; Screven, 1974b; Shettel, 1973). If the abstract mannequin was not found to be eyecatching then it was not performing part of its function.

In terms of the scales "active - passive" and "energetic - non-energetic", the abstract mannequin was found to be almost as favourable as the period mannequin on the former and second most favourable on the latter. In terms of the activity objectives for the exhibit, the abstract mannequin would be a good choice. However, that was the only area in which the abstract mannequin excelled and since this particular exhibit had more to convey than action, the abstract mannequin would not be the best choice.

The body form that was found to be the least favourable in terms of the viewers' overall responses was the flat two-dimensional form. It was found to be the least favourable body form for the scales "active - passive", "attractive - unattractive", "explicit - ambiguous", "energetic - non-energetic" and "sharp - dull". The two-dimensional flat form was not found to be quite as unfavourable as the abstract mannequin for the scales "dead - alive" and "eyecatching - non-eyecatching". However, considering the results of this study in terms of the cognitive and affective objectives of the exhibit, the flat two-dimensional body form was not a favourable body form to use in the swimwear exhibit.

When the viewers' affective responses to the body form and the viewers' cognitive responses to the exhibit were examined in terms of relationships that may have existed, the results indicated that a significant correlation existed between the variables for only those who viewed the abstract mannequin. No significant correlation was found for any of the other three groups, nor was there a significant correlation

found for the total sample of viewers. These results were not surprising when one considers the fact that no difference was found on the viewers' cognitive responses among the groups.

Consequently, for the swimwear exhibit used in this study, the body forms did not make a difference to the viewers' cognitive responses among the four groups of viewers. Four possible explanations were discussed in the findings chapter. Briefly, the first explanation suggested that the written information in the exhibit was so clearly stated that it was easy for all viewers to receive the message regardless of the body form used to display the costume. Secondly, the body forms in this particular exhibit may not have been important to the communication of the message. The message was presented in multiple primary channels (Schram in de Vito, 1981) which included the body forms, the costume, a photograph and labels. Either of the latter two channels may have influenced cognitive response so that changing the body form would not make a difference. Thirdly, an item analysis of the objective test indicated that five out of the eleven questions were relatively easy in terms of difficulty which suggests why many of the subjects could guess at the correct answer regardless of body form. Lastly, the information presented in the exhibit may have been too simple and brief that anyone over the age of 14 could recall the information regardless of the type of body form used. The findings from this study with regards to cognitive response are not generalizable to all other exhibit situations. Researchers may find in other cases that differences do occur at the cognitive level.

Despite the lack of impact on cognitive response, the body forms were found to be a very important factor with respect to the viewers' affective response in the swimwear exhibit. This finding with regard to affective response is important as most exhibits and more specifically costume exhibits are designed with some affective objectives in mind whether they be for the visitor to display specific emotions such as shock or happiness or to simply encourage the visitor to enjoy and to view the exhibit longer. The affective objectives are just as much a part of the communication of the costume exhibit message as the cognitive objectives and should be observed by exhibit designers and curators as important responses to aid in their selection of costume display methods instead of relying on personal feelings and aesthetics sensitivities. This conclusion is supported by Screven's (1974b) statement that "the performance of the visitors themselves validates the exhibition methods - not professional exhibit designers, educators, curators, psychologists" (p. 12).

While the results of the present study are interesting in terms of specific outcomes for costume exhibits, the study is also important to other researchers in terms of the methodolgy used, the need for more research to be done in the area of visitor response research and the difficulties in gathering visitor response data in the museum environment. The following section on recommendations will discuss some of these issues.

Recommendations

On the basis of the findings for this study several recommendations have been formulated. The recommendations are listed below under three sections.

Recommendations for Improving the Methodology of the Study

1. The instruments used to collect the data in this study should be further developed and tested for reliability and validity in order to streamline the evaluative process. This in turn may encourage more research and consistency in research in the area of exhibit evaluations, if new instruments do not have to be developed every time (Borun, 1977).

a. Specifically, the Andrews Semantic Differential proved to be an easy and quick method of collecting affective response data in the present study. However, in using the Andrews Semantic Differential again for similar studies, the researcher would advocate shortening the instrument by removing some of the scales and also performing a reliability test on the instrument. In a study similar to the present one the researcher would remove the scales "pleasant - unpleasant", "sharp - dull" and "silent - loud" which did not cluster significantly with any one of the three factors. In using the Andrews Semantic Differential in general for affective response to costume exhibits, the potency scales could be eliminated if strength qualities are not important to the communication of that particular message. Similarily,

the activity scales could be eliminated if activity is not important to the communication of that particular message. The researcher would not eliminate any of the evaluative scales as all exhibits should elicit some "good - bad" feelings from the visitors.

b. The objective test was found to contain several relatively easy questions after an item analysis was performed. It would be advisable to increase the difficulty of some of the questions and also to perform another reliablilty test.

2. Researchers conducting a study similar in nature to the present study should take note of the location of their exhibit ensuring that it is conducive to the subjects' accessibility. A secluded exhibit location, as was the case in the present study, can result in a very low visitation rate which in turn may seriously impede the data collection process.

3. It would be useful in a similar study for the researcher to obtain more assistance in collecting the data in order to facilitate the time in which it takes to complete the data collection task. Methods such as employing additional interviewers to collect the data, using a computer that is part of the exhibit plan, using instruments such as Borun's 'portable testing machine' where the visitors pressed buttons to record answers (1977), or Screven's portable punch board containing multiple choice questions (1974) would facilitate the data collection task.

Recommendations for Further Research

1. Although the research design adopted in this study was useful there are two other designs that may prove worthwhile for exhibit evaluation research in general and for costume exhibit evaluation research, more specifically.

a. A comparison of affective responses towards the independent variable within the same sample instead of between different groups may shed some light on the individual responses as opposed to the group's responses. The one sample design would also control for history.

b. A pretest-posttest situation with one sample group instead of two should also be considered. This design would only be possible for the affective variable as the subject could not be retested on cognitive information without an increase in score. Testing the affective variable with one sample in a pretest and posttest situation may provide some information on viewers' preconceived feelings of museum mannequins as well as their actual feelings of the body forms being tested.

2. It would be worthwhile to investigate other methods of collecting the cognitive and affective data in order to facilitate the time which it takes to complete the data collection task as well as making the data collection process more appealing to the subjects. Methods such as Borun's 'portable testing machine' (1977), Screven's portable punch board containing multiple choice questions (1974), and an infrared computer-based oculometer (Nielsen, 1975), which tracks a subject's eye

movements could be employed. However, in order to use a method such as the oculometer in the museum environment as an unobtrusive instrument, modifications would have to be made so as not to interfere with the casual visitor's interaction with the exhibit.

3. It may also prove worthwhile to conduct similar studies to the present one looking at multiple channels of communication (Schram in de Vito, 1981), rather than only one channel (i.e., one display form or one costume). For example, a larger costume exhibit using many body forms of the same type with many types of costume related artifacts could be tested. However, in studying the problem of multiple channels of communication, the controls set out in the present study with regards to one artifact would no longer be in effect.

4. It may prove worthwhile to investigate the impact of photographs on the viewer of an exhibit in terms of cognitive response and also the relationship between a photo and a costume on a body form in terms of cognitive response should be looked at. It was found in the present study that the body forms used in the exhibit made no difference to cognitive response. This lack of difference may have been attributable in part to the fact that the exhibit presented the information in multiple channels (Schramm in de Vito, 1981), one of which was a photo of three women wearing bathing suits similar to the bathing suit being presented on the body forms. However, the researcher is not certain if the photo had any affect, perhaps the viewer could glean as much

information from the photograph as the costume itself.

5. It may prove worthwhile to investigate the effects of the demographic variables on the cognitive and affective variables in similar studies, as other sources have found relationships do occur between these variables (Shettel, 1973).

6. Further testing with regards to visitors' cognitive and affective responses should be done using other types of body forms. Some methods that would be worthwhile to test include: department store mannequins which are often not suited to the period one is attempting to recreate, but nevertheless often used in costume exhibits; soft sculpture mannequins, mannequins that are decorative themselves, a costume displayed without any form at all, and body forms with differing facial features, and the difference between two and three-dimensional body forms.

7. Further testing with regards to visitors' cognitive and affective responses should be done on other types of costumes, as the present study only used one type of costume, a bathing costume.

8. It may also prove worthwhile to investigate the use of different levels of difficulty with regards to content as well as different methods of presenting the same or similar information to determine if there are any significant differences between the groups for cognitive

response.

9. Visitors' responses to participatory exhibits in general and more specifically to costume exhibits should be tested. This would provide a useful comparison to the present study, as well as general information on the subject. Such a study may also test Screven's suggestion that the teaching and motivational effectiveness of existing exhibits even bad ones, can be improved by adding participatory components (Screven, 1976).

10. More research should be done with respect to the cognitive and affective responses towards costume exhibits of different populations. Some populations that would be worthwhile to consider include subjects under the age of 14 to see what differences may exist between various groups of children and between children and adults, and subjects viewing a similar exhibit in a museum as opposed to another setting such as an art gallery to determine what differences may exist.

11. Similarily, the responses of the one population viewing an exhibit in two different settings such as a museum and a shopping mall or art gallery should be tested. For example, the museum visitor may like an abstract mannequin in a shopping mall environment more than in a museum environment.

12. Another worthwhile investigation would be how the affective

responses of museum visitors compares to the affective responses of curators and designers. This investigation may shed some light on Screven's (1974) statement that "the performance of the visitors themselves validates the exhibition methods - not professional exhibit designers, educators, curators, psychologists" (p. 12).

Recommendations for Museum Curators, Designers and Educators

1. Schram's basic communication model (de Vito, 1981, p. 3) that was used a basis for the methodology in the present study should be studied by all museum researchers and planners. The Schram communication model provides a simple diagramatic explanation of how human communication works which can easily be adapted to the museum learning environment. Museum exhibit planner have to realize that the communication process is cyclical in nature; that it usually involves multiple primary and secondary channels of communication, all of which may influence whether the visitor receives the information; and that the more the exhibit planner and his message have in common with the audience such as language, educational background, knowledge of the topic, age and so forth the easier it will be to communicate the message.

2. There definitely exists a need for more evaluation research to be conducted in the area of museum visitor characteristics and response to costume exhibits and body forms (Borun, 1977). Evaluation research is essential in order to assist the exhibit planners in determining if

their exhibits are doing what they intended them to do and to determine if the correct target population is being catered to. Evaluation research can also be used to justify the existence of the exhibit, the amount of time and money spent on producing the exhibit and the types of display methods used in the exhibit.

3. A quality demographic data base on museum visitors and a data base with respect to museum visitor responses should be developed. The present study had limited demographic data on museum visitors against which to make a comparison nor was there any empirical research against which to compare the affective and cognitive data. A data base would also facilitate the development and analysis of future research questions.

4. The researcher for the present study advocates the use of formative goal-referenced evaluation similar to that used by Brown (1979) and Screven (1976) for the use on exhibits in general. Formative goal-referenced evaluation was used in the present study and was incorporated into the planning stages of the exhibit. When planning new exhibits the researcher does not advocate the use of ex post facto evaluations.

5. Systematic testing of exhibit variables is another part of the methodology used in this study that should be further used in other exhibit evaluation studies. There definitely needs to be more

information on the performance of specific exhibit components in order to provide museum exhibit planners with a data base as to which methods are most favourable (Parsons, 1965).

6. A team approach is also strongly suggested when planning exhibits and exhibit evaluations. The team approach would effectively result in a lighter work load for each member of the team as well as allowing for idea generation and cross checks which result from group efforts. Brown also states that the team approach to planning and evaluation is essential for handling the "multi-discplinary nature of goal-referenced design" (Brown, 1979, p. 10).

7. Other approaches to the methodology used to collect visitor response data should also be looked at. Specifically, goal-free evaluation not used in the present study could be tried in other studies.

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APPENDICES

APPENDIX I

APPENDIX I

Two Dimensional Form Construction Method

The two dimensional flat form was constructed based on a method advanced by Karyn Jean Harris (1977, pp. 42-49). For the present study the following procedure was developed.

1. Measurements of the bathing costume were taken and a paper pattern of the garment was drawn.

2. The paper pattern was used as a template for drawing and cutting a flat support of 1/4" foam core board. Foam core is a board in which foam is sandwiched between two pieces of cardboard.

3. The pattern was also used to construct a quick muslin replication of the bathing costume that was used in the display. This step was included so as to reduce the amount of contact of the bathing costume had with the acidic foam core and to reduce the amount of handling of the bathing costume itself when adjusting the flat form during construction.

4. The muslin replication was tried on the foam core form to determine if the shape and size were approximately correct. Adjustments were made, allowing room for polyester fiberfill padding.

5. The foam core form was then padded with polyester fiberfill to protect the artifact from sharp edges and corners. The muslin

replication was again tried on several times until the padding was appropriate for the costume. Then the actual artifact was tried on the form to determine final adjustments to the padding.

6. The form was then covered with unbleached washed muslin. A pattern for the muslin cover was drawn using the foam core form itself. The muslin cover was then sewn by hand to the form.

7. Since the bathing costume to be displayed on the flat form was always worn with stockings, flat legs to support the stockings were also constructed. The flat legs were constructed using the same method and materials as the flat form for the body. The legs were stitched to the form.

8. The form and costume were suspended in the display case by stitching monofilament through the shoulder areas of the form.

APPENDIX II

APPENDIX II

Three Dimensional Torso Form Construction Method

The three dimensional torso form was constructed based on a methodology developed by Colleen Wilson at the Glenbow Museum in Calgary (Wilson, 1980). For the present study the following procedure was developed.

1. Measurements from the inside of the garment were taken. These measurements included the circumference of the waist, chest, hips and at three inch intervals between these points. The shoulders, armholes, center back and center front were also measured.

2. The measurements were then used to draw a paper pattern for disk shapes that would correspond to the period silhouette and size of the bathing costume. This step in the procedure was probably the most difficult as careful research of the period silhouette does not ensure that the designer can readily translate this idea into the proper form.

3. The paper patterns were used as templates to trace a pattern on two inch thick styrofoam. The styrofoam disks were then cut out.

4. The disks were then stacked on top of one another in order to determine if the form was approximately what was intended. It was found that the form was too short for the costume so a few more disks were cut and added to lengthen the body.

5. The styrofoam disks were then glued together with white glue

and allowed to dry.

6. Then the form was ready for shaping, keeping in mind the early 1900 monobosom silhouette that was needed for the bathing costume. A bread knife was used to shave off pieces of styrofoam so that there was a smoother transition between the disks.

7. The quick muslin replication that was made to try on the flat form was also used for trial purposes with the torso form. The replication was tried on the form after the initial smoothing of the form was done. It was found that quite a considerable amount of the styrofoam still needed to be cut off the form in order to accommodate the costume and padding.

8. The researcher continued to cut and shape the form until the desired shape and size were achieved.

9. The form was then covered with a padding of polyester fiberfill that was wrapped around the form and hand stitched in place. The replica was again tried on the form at this stage. A few adjustments were made and then the original bathing costume was tried on the form.

10. Finally the form was covered with washed unbleached muslin. No pattern was made for the muslin cover, but rather the muslin was draped on the foam and darts were taken in where necessary. All stitching was done by hand.

11. Since the bathing costume was always worn with stockings and because a similar active pose to the period and abstract mannequins was desired, the torso form also needed bendable legs. Bendable soft

sculpture legs were made by inserting a coat hanger padded with fiberfill into a pair of black leotards. Additional padding was also inserted into the leotards to achieve a fairly realistic shape.

12. The legs were then hand stitched to the torso.

13. The torso form was suspended by using the same metal stand that was used for the abstract and period mannequins.

APPENDIX III

APPENDIX III

Particulars for the Commercial Mannequins

The period mannequin and the abstract mannequin were ordered from Jerry Roe Enterprises, Inc., 432 Austin Place, Bronx, N.Y., 10455 (Phone 212-993-7766). Both mannequins are made from fiberglass reinforced plastic. The period mannequin came with a Smithsonian style face, a monobosom style chest to fit the period of the early 1900's, unbendable arms, unbendable legs that were interchanged with the abstract mannequins bendable legs, a custom period wig of synthetic material that was found to be unsuitable and had to be substituted for a human hair wig styled to suit the early 1900's styles, subtle makeup and a stand.

The abstract mannequin or ladies multi-form abstract manikin as the distributor refers to it, came with bendable arms and legs, mitt-like hands, a contemporary shaped bosom that had to be padded out to resemble the monobosom shape of the early 1900's, a blank face, no hair and a stand. The bendable arms were found to be unsuitable for a short sleeved garment such as the turn of the century bathing suit so they were substituted on the abstract mannequin for the period mannequin's unbendable arms. The wig that was used on the period mannequin was also used on the abstract mannequin.

APPENDIX IV

APPENDIX IV

Women's Bathing Costume Exhibit Proposal

1. Subject:

Women's bathing costumes worn in Alberta during the first two decades of the twentieth century - the functional aspects.

2. Purpose of Exhibit:

1) To illustrate to the visitor the type of clothing women wore for the purposes of bathing and swimming in Alberta during the first two decades of the twentieth century.
2) To collect visitor response data on four different methods of displaying one particular bathing costume.

3. Time Frame of Exhibit (1890's-1910's)

From the period of about 1890-1910 women were still obliged to wear voluminous garments for swimming and bathing. It was not until the 1920's and later that bathing suits became what they are today.

An earlier period of bathing costume history was not chosen because it would not relate to Alberta history and thus would not relate

to an essential criterion set by the Provincial Museum of Alberta for exhibits to be held within their institution.

4. Target Population:

The exhibit and the data collection instruments were geared towards a summer Provincial Museum of Alberta population who were 14 years of age and older, were approximately at a Grade 7 level of education. The exhibit itself was not specifically designed for children below Grade 5, although many of them could probably glean some information from the exhibit.

5. Educational Objectives (Cognitive)

a. Visitors are to know what the costume in the exhibit was used for so that they can identify the correct answer in a multiple choice question.

b. Visitors are to know who (gender) wore a costume of this type so that they can identify the correct answer in a multiple choice question.

c. Visitors are to know in what time period this type of costume was worn so that they can identify the correct answer in a multiple choice question.

d. Visitors are to know the basic parts of the turn of the century bathing suit so that they can identify the correct answer in a multiple choice question.

e. Visitors are to know the common colours of the bathing suits worn between 1890 and 1920 so that they can identify it in a multiple choice question.

f. Visitors are to know the common fiber content of the bathing suits between 1890 and 1920 so that they can identify it in a multiple choice question.

g. Visitors are to know why women wore these suits between 1890 and 1920 so that they can identify the correct answers in a multiple choice question.

h. Visitors are to know why this style of bathing suit changed after the late 1920's so that they can identify at least 2 reasons in a multiple choice question.

i. Visitors are to gain an appreciation of past bathing suit styles from 1890 to 1920 with respect to current styles so that they can identify the amount of body covered seventy years ago as compared to now in a multiple choice question.

j. Visitors are to know which parts of the female body were covered when wearing a suit like the one in the exhibit so that they can identify the correct answer in a multiple choice question.

k. Visitors are to gain an appreciation (visual awareness) of the basic shape of women's bathing suits from the 1890's to 1920 so that they can identify the correct line drawing in a multiple choice question.

l. Visitors are to gain a visual awareness of what the general hairstyle that was worn with the turn of the 20th century bathing costumes so that they can identify the correct line drawing in a multiple choice question.

6. Affective Objective

a. Viewers are to like the mannequin or body form used to display the bathing costume. Like or dislike will be measured on the Andrews Semantic Differential.

7. Evaluation of Exhibit Objectives

The educational objectives will be measured by means of an objective test to determine what a sample of viewers actually learned from the exhibit with each different body form used in it as compared to

the knowledge visitors possess on this information without seeing the exhibit.

The affective objective will be measured on the Andrews Semantic Differential, an instrument to gather data on the viewers' feelings towards the costume display techniques.

8. Brief Description of the Exhibit (What is it? Panels? Cases?)

1 costume	- early 20th century costume from the University Costume Collection.
1 case	- to house the costume and other supportive display material.
1 photo	- showing three girls in early bathing costumes in Alberta, blown up and matted.
1 title and introduction	- silkscreened directly on the back of the case.
2 text panels	- silkscreened - one was in the form of a sign that could be placed in the sand on a beach (rough wood).
Wood chips, pebbles, sand, driftwood	- to simulate a beach

9. Exhibit Budget

I. Personnel	Cost	Funded By
a. Researcher	nil	
- J. Andrews		
b. Conservator	nil	
- J. Andrews		

c. Curator absorbed in general costs Museum

f. Designer absorbed in general costs Museum

e. Shop worker absorbed in general costs Museum

f. Preparator

- J. Andrews nil

g. Interviewers

-one volunteer(pretest) nil

-researcher(posttest) nil

II. Costume Supports

a. Two - dimensional support

- constructed by researcher
- Foam Core Board

(1 sheet, 4' x 8' x 1/2" c. $38.00 Researcher

- Polyester fiberfill supplied by University Costume Collection
- Unbleached muslin supplied by University Costume Collection

(see Appendix I for details on construction)

b. Three - dimensional torso

- no limbs or head
- constructed by researcher
- 1 sheet styrofoam supplied by University Costume Collection
- Adhesive supplied by Researcher
- Polyester fiberfill supplied by University Costume Collection

- Cotton Cover supplied by University Costume Collection

(see Appendix II for details on construction)

c. Period Mannequin

- with arms, legs and head
- hair and facial features $450.00 University Collections

d. Museum Mannequin

- abstract face and hands $420.00 University Collections

III. Supportive Materials

a. Photograph absorbed in general costs Museum

b. Text Panels(2) absorbed in general costs Museum

c. Label (sign in sand) absorbed in general costs Museum

APPENDIX V

APPENDIX V

Exhibit Labels

Title: Bathing Suits in Early Alberta

Introduction: The earliest style of bathing suit worn by women in Alberta was a voluminous two piece woolen garment.

(to be screened directly on the back wall of the case below the title).

Panel #1: Why Were These Styles Worn?

Prevailing attitudes towards modesty required that women's bodies be fully covered.

Suntans were unfashionable.

Panel #2: Why Did Styles Change?

Attitudes toward modesty changed.

These suits were heavy and cumbersome.

Women changed from passive bathers to active swimmers.

Photo: (Three girls pulling in a boat.)

Courtesy of the City of Edmonton Archives

(to be screened directly on the photo)

Early bathing suits were almost always dark in colour -red, black or navy blue.

(below photo on same panel as the photo)

Sign in the Sand: Bloomer Suit and Skirt
University of Alberta Costume Collection
(smaller type and right justified)

Stocking, Shoes, Cap
facsimiles
(smaller type and right justified)

Similar styles were worn in Alberta from 1890 to 1920.

APPENDIX VI

APPENDIX VI

PRETEST QUESTIONNAIRE

DEMOGRAPHIC QUESTIONNAIRE

INTERVIEWER:_____
NUMBER:_____1-3/
DATE:_____4-7/
TIME:_____8-11/

TIME VIEWING:_____12-14/
MANN:_____15/

Hello, I am doing research on museum exhibits. Have you participated in a survey in this museum in the last 3 weeks?

1. Yes ____
   No ____ 16/

2. Would you mind spending a few minutes answering some questions?

   Yes ____
   No ____

3. (Hand Card A) For the purposes of classification into which of the following age groups should I check you?

   a) 14-19 years
   b) 20-24 years
   c) 25-29 years
   d) 30-34 years 17/
   e) 35-39 years
   f) 40-49 years
   g) 50-64 years
   h) 65 years and older

   i) Refused

4. Sex: OBSERVE

   Male ____ 18/
   Female____

5. What was the last grade or year of school that you completed?

No formal schooling ____
Public/elementary school - some ____
- graduated ____
Secondary/high school - some ____
- graduated ____
Technical/senior college
(above secondary/high school) - some ____
- graduated ____ 19-20/
University - some ____
- graduated ____
Post graduate University - some ____
- graduated ____
Other (write in) _____

6. Do you live in Edmonton?

Yes ____ 21/
No ____

7. If no to #6 22-23/
Where do you live?

Alberta - Where? _____
B.C. ____
Saskatchewan ____
Manitoba ____
Ontario ____
Maritimes, Newfoundland ____ 24/
Yukon ____
N.W.T. ____
U.S.A. ____

Other _____

8. How often do you visit this museum?

a) First visit
b) At least once a week
c) Once a month
d) Once in 6 months 25/
e) Once a year
f) Once in 2 years
g) Other _____

9. How often do you visit museums other than this one?

a) At least once a week
b) Once a month
c) Once in 6 months 26/
d) Once a year
e) Once in 2 years
f) Never
g) Other _____

Thank you, now I would like to ask you a few questions relating to clothing exhibits.

Objective Questionnaire

The questions are multiple choice.

I will give you a card with each question and possible answers to it.

I will read the question to you.

You may then select an answer and give me the letter beside the answer.

Please try to choose the best answer for each question. (Show visitor the photograph of the bathing costume).

1. What was this type of garment once used for?

a) housework
b) sleeping/lounging
c) everyday wear 27/
d) swimming/bathing
e) gardening/farming

2. This style of garment was worn by _____.

a) women and girls
b) men and boys
c) men and women 28/
d) women and children

3. During what time period was the costume in the photograph worn in Alberta?

a) 1850 - 1890
b) 1890 - 1920 29/
c) 1820 - 1850
d) 1920 - 1940

4. Women's bathing costumes around the turn of the twentieth century consisted of _____.

a) bloomer suit, cape, straw hat, sandals
b) two piece suit, cape, pants, slippers 30/
c) bloomer suit, cap, skirt, stockings, shoes
d) one piece suit, beach coat, sandals

5. Common colours for women's bathing suits at the turn of the twentieth century were:

a) beige, navy, brown
b) pink, white, navy 31/
c) green, orange, navy
d) black, red, navy

6. Women's bathing suits worn in Alberta between 1890 and 1920 were made of _____.

a) rayon
b) wool
c) linen 32/
d) nylon

7. Women wore this style of bathing suit in Alberta from about 1890 to 1920 for _____.

a) modesty and safety
b) modesty and protection from the sun's rays 33/
c) modesty and protection from insects
d) modesty and exposure to the sun's rays

8. Why did bathing suit styles eventually change?

a) attitudes changed, manufacturers went bankrupt
b) attitudes changed, fashion became important in Alberta 34/
c) attitudes changed, suits were heavy and cumbersone
d) attitudes changed, fabric shortages developed

9. Which of the following parts of the female body were exposed when wearing a turn of the twentieth century bathing suit?

   a) shoulders, arms, legs
   b) legs, face, neck
   c) back, legs, arms
   d) arms, neck, face

35/

10. Which of the following diagrams best illustrates the shape of women's bathing suits from the 1890's to 1920?

   a) b)
   c) d)

36/

11. Which of the following diagrams best illustrates the hairstyle and hat worn with the turn of the 20th century bathing costume?

   a) b)
   c) d)

37/

12. Have you seen the women's bathing suit exhibit displayed in this museum yet?

   Yes ____
   No ____

APPENDIX VII

APPENDIX VII

POSTTEST QUESTIONNAIRE

DEMOGRAPHIC QUESTIONNAIRE

INTERVIEWER:_____
NUMBER:_____1-3/
DATE:_____4-7/
TIME:_____8-11/

TIME VIEWING:_____12-14/
MANN:_____15/

Hello, I am doing research on museum exhibits and I noticed that you viewed the swimming exhibit. Would you mind spending a few minutes answering some questions about this exhibit?

1. Yes ____
   No ____ 16/

2. Have you participated in a survey in this museum in the last 3 weeks?

   Yes ____
   No ____

First of all, I would like to ask you a few questions that will help me classify the information.

3. (Hand Card A) For the purposes of classification into which of the following age groups should I check you?

   a) 14-19 years
   b) 20-24 years
   c) 25-29 years
   d) 30-34 years 17/
   e) 35-39 years
   f) 40-49 years
   g) 50-64 years
   h) 65 years and older

   i) Refused

4. Sex: OBSERVE

   Male ____ 18/
   Female____

5. What was the last grade or year of school that you completed?

No formal schooling ____
Public/elementary school - some ____
- graduated ____
Secondary/high school - some ____
- graduated ____
Technical/senior college
(above secondary/high school) - some ____
- graduated ____ 19-20/
University - some ____
- graduated ____
Post graduate University - some ____
- graduated ____
Other (write in) _____

6. Do you live in Edmonton?

Yes ____ 21/
No ____

7. If no to #6 22-23/
Where do you live?

Alberta - Where? _____
B.C. ____
Saskatchewan ____
Manitoba ____
Ontario ____
Maritimes, Newfoundland ____ 24/
Yukon ____
N.W.T. ____
U.S.A. ____

Other _____

8. How often do you visit this museum?

a) First visit
b) At least once a week
c) Once a month
d) Once in 6 months 25/
e) Once a year
f) Once in 2 years
g) Other _____

9. How often do you visit museums other than this one?

a) At least once a week
b) Once a month
c) Once in 6 months 26/
d) Once a year
e) Once in 2 years
f) Never
g) Other _____

Thank you, now I would like to ask you a few questions relating to this exhibit.

This next section will be divided into two parts:

1) a short questionnaire and
2) a series of rating scales.

Part One - Objective Questionnaire

The questions are multiple choice.

I will give you a card with each question and possible answers to it.

I will read the question to you.

You may then select an answer and give me the letter beside the answer.

Please try to choose the best answer for each question. And, please do not look back at the exhibit.

1. What was the garment in the display used for?

a) housework
b) sleeping/lounging
c) everday wear 27/
d) swimming/bathing
e) gardening/farming

2. This style of garment was worn by _____.

a) women and girls
b) men and boys
c) men and women 28/
d) women and children

3. During what time period was the costume in the display case worn in Alberta?

   a) 1850 - 1890
   b) 1890 - 1920 29/
   c) 1820 - 1850
   d) 1920 - 1940

4. Women's bathing costumes around the turn of the twentieth century consisted of _____.

   a) bloomer suit, cape, straw hat, sandals
   b) two piece suit, cape, pants, slippers 30/
   c) bloomer suit, cap, skirt, stockings, shoes
   d) one piece suit, beach coat, sandals

5. Common colours for women's bathing suits at the turn of the twentieth century were:

   a) beige, navy, brown
   b) pink, white, navy 31/
   c) green, orange, navy
   d) black, red, navy

6. Women's bathing suits worn in Alberta between 1890 and 1920 were made of _____.

   a) rayon
   b) wool
   c) linen 32/
   d) nylon

7. Women wore this style of bathing suit in Alberta from about 1890 to 1920 for _____.

   a) modesty and safety
   b) modesty and protection from the sun's rays 33/
   c) modesty and protection from insects
   d) modesty and exposure to the sun's rays

8. Why did bathing suit styles eventually change?

   a) attitudes changed, manufacturers went bankrupt
   b) attitudes changed, fashion became important in Alberta 34/
   c) attitudes changed, suits were heavy and cumbersone
   d) attitudes changed, fabric shortages developed

9. Which of the following parts of the female body were exposed when wearing a turn of the twentieth century bathing suit?

   a) shoulders, arms, legs
   b) legs, face, neck 35/
   c) back, legs, arms
   d) arms, neck, face

10. Which of the following diagrams best illustrates the shape of women's bathing suits from the 1890's to 1920?

   a) b) 36/
   c) d)

(Note: Visitor was handed a card with four line drawings on it. See Appendix VIII).

11. Which of the following diagrams best illustrates the hairstyle and hat worn with the turn of the 20th century bathing costume?

   a) b) 37/
   c) d)

(Note: Visitor was handed a card with four line drawings on it. See Appendix VIII).

APPENDIX VIII

APPENDIX VIII

Andrews Semantic Differential

Part Two - Rating Scales

For this part of the interview, I would like you to go over to the swimming exhibit with this list of descriptive scales and judge the body form or mannequin used to display the bathing costume in the exhibit. Do not judge the costume. Judge the form used to display the costume.

First, here is a brief description of how to use the scales:

HARD__:__:__:__:__:__:__SOFT

There are seven blank spaces between each set of words, mark an X on the line (not on the dots) that is most clearly related to your feelings about the body form or mannequin in relationship to each pair of words.

If you feel that one particular end of one of the scales is closely related to your feelings about the body form or mannequin, place an X as follows:

HARD_X_:__:__:__:__:__:__SOFT

OR CLOSELY RELATED

HARD__:__:__:__:__:__:_X_SOFT

If you feel that the body form is quite closely related to one of the words in the pair place your X as follows:

HOT__:_X_:__:__:__:__:__COLD

OR QUITE CLOSELY RELATED

HOT__:__:__:__:__:_X_:__COLD

If you feel that the body form or mannequin is slighty related to one of the words in the pair place your X as follows:

GOOD___:___:_X_:___:___:___:___BAD

OR SLIGHTLY RELATED

GOOD___:___:___:___:_X_:___:___BAD

The middle line of each scale can be marked if you consider the body form to be neutral in relationship to that particular scale or if you consider the scale to be irrelevant to your feelings about the body form or mannequin in relationship to this exhibit.

GOOD___:___:___:_X_:___:__:___BAD NEUTRAL

Wherever you place your X depends on your feelings about the form used to display this costume.

HAND VISITOR THE CLIP BOARD WITH THE SCALES ATTACHED AND INSTRUCT HIM/HER TO LOOK AT THE EXHIBIT WHILE COMPLETING THE SCALES.

NUMBER: _____

What are your feelings about the body form used to display this costume?

attractive	___:___:___:___:___:___:___	unattractive
dead	___:___:___:___:___:___:___	alive
non-energetic	___:___:___:___:___:___:___	energetic
informative	___:___:___:___:___:___:___	uninformative
interesting	___:___:___:___:___:___:___	boring
ineffective	___:___:___:___:___:___:___	effective
passive	___:___:___:___:___:___:___	active
strong	___:___:___:___:___:___:___	weak
pleasant	___:___:___:___:___:___:___	unpleasant
sharp	___:___:___:___:___:___:___	dull
explicit	___:___:___:___:___:___:___	ambiguous
non-eyecatching	___:___:___:___:___:___:___	eyecatching
overpowering	___:___:___:___:___:___:___	subtle
silent	___:___:___:___:___:___:___	loud
static	___:___:___:___:___:___:___	dynamic

APPENDIX IX

APPENDIX IX

Visual Aids for the Questionnaire

A. Photograph shown to pretest group.

B. Line drawing shown to posttest and pretest groups for question number 10 of the objective questionnaire.

A.

B.

C.

D.

C. Line drawing shown to posttest and pretest groups for question number 11 of the objective test.

A

B

C

D

APPENDIX X

APPENDIX X

Photographs of the Four Different Mannequins used in the Exhibit

A. Two-Dimensional Form

B. Three-dimensional torso form

C. Three-dimensional commercial mannequin with abstract face and hands.

D. Three-dimensional commercial mannequin with facial features.